ecology and environment, inc.
1509 MAIN STREET, DALLAS, TEXAS 75201, TEL. 214-742-6601
International Specialists in the Environment

MEMORANDUM

TO: Ed Sierra, Region VI RPO

THRU: K. H. Malone, Jr., FITOM

FROM: Kurt Soutendijk, FIT Chemist

DATE: January 18, 1990 **TDD:** F06-8908-36
PAN: FTX1008PAA

SUBJECT: Preliminary Assessment Under the Environmental Priorities Initiative for Monier Resources, Inc.
Buda, Hays County, TX (TXD981605835)

I. Site Information

Monier Resources, Inc. (MRI) is an inactive facility located on Ranch Road 2770, two miles south of Buda, Hays County, Texas. The geographic coordinates are 30°3'42" north latitude and 97°5'17" west longitude (Figure 1). The facility operated as a manufacturer of cement admixtures (liquid chemical solutions) (Reference 1, page 5).

MRI changed its name to Monex Resources, Inc. (Reference 2). Its offices are located at 45 N. E. Loop 410, Suite 700, San Antonio, Texas 78216. Its net worth is not known. An evaporation pond is the only Solid Waste Management Unit (SWMU) on-site.

The purpose of this assessment is to determine whether hazardous waste at MRI presents a threat to human health and environmental safety.

II. Background/Operating History

A. Site History

Constructional Chemicals, Inc. constructed an on-site evaporation pond in 1980. MRI began operation of the facility in December 1980. The facility received wastes from December 1980 to November 1985. The pond was a depository for waste water generated from cleaning stationary tanks and tank trucks. The tank trucks and stationary tanks were used for transportation and containment of cement admixture solutions mixed on-site (Reference 1).

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On November 6, 1985, elevated concentrations of chromium were detected in pond waste water. The chromium came from potassium dichromate in the admixtures. The pond was subsequently remediated (Reference 1, page 3).

B. Discussion of Known/Potential Problem(s)

Analysis of samples collected from a monitoring well revealed elevated concentrations of chromium. Analysis of subsequent samples from the same well did not reveal chromium. Three wells were installed downgradient of the original well to detect migration of the chromium plume. Analysis of samples collected from these wells did not reveal chromium. The Texas Water Commission (TWC) released MRI from further ground water monitoring based on these analyses (Reference 3; Reference 10).

Analysis of TWC water samples collected from the pond on November 6, 1985 revealed chromium concentrations of 5.920 mg/l. Analysis of 26 post-remedial soil samples collected in and around the pond detected chromium concentrations below the EP Toxicity maximum concentration (Reference 1, page 4).

Records manifest the completion of the following remedial actions:

- Waste water in the pond was treated with flocculent and shipped to the City of Austin industrial waste water facility (Reference 1, page 3).

- Sludge in the pond was solidified with fly ash and cement. The stabilized sludge, pond liner and limited quantities of selected surface soil surrounding the pond were disposed at the City of Austin Type 1 Municipal Solid Waste Facility (Reference 1, page 3).

An off-site reconnaissance inspection was not conducted because sufficient information was available in EPA RCRA and TWC files.

III. Unit Description/Waste Containment/Hazardous Substance Identification

MRI disposed waste water generated from the washing of tank trucks and stationary tanks in an on-site evaporation pond. The pond has been remediated and awaits approval for closure from the TWC (Reference 5). The pond was 96 by 87 feet and had a volume of 320,000 gallons of water and 50,000 gallons of sludge (Reference 1, page 3).

IV. Pathway Characteristics

A. Air Pathway Characteristics

The air migration potential of potassium dichromate is low. Potassium dichromate is involatile, but chance of particulate air migration exist. The infinitesimal concentrations of potassium dichromate on-site make air migration negligible.

B. Ground Water Characteristics

MRI is located in the Balcones fault zone. The infrastructure contains three fundamental strata. The Quaternary system, with an average thickness of 75 feet, and sand and gravel consistency, is surficial. Below the Quaternary is the Tertiary system. Predominant here are sandstone and clay. Thicknesses vary from 900 to 2,000 feet.

Beneath the Tertiary strata is the Cretaceous. Here, the essential component is limestone (Reference 6).

The Edwards aquifer elevation is 666 feet above sea level at a test hole 20 miles south of MRI. MRI is in the same position relative to the "bad water line" (Reference 77). The elevation at MRI is 743 feet above sea level (Figure 1) and the aquifer depth is 77 feet.

The Edwards aquifer is in a karst area and the ground water flow is northeast (Reference 15). The aquiferous enclave of the Edwards aquifer directly beneath MRI is confined by the Eagle Ford Group. This group is 70 feet thick and the aquiferous region beneath it is 660 feet thick (Reference 7).

The Edwards aquifer is a sole source aquifer (Reference 8). The net precipitation is 1.12 inches (Reference 9).

C. Surface Water Characteristics

The surficial characteristics are planate with scattered trees and bushes. The soil is a gravely-sand with high permeability (Reference 10).

There are various intermittent drainage pathways. The Mustang Branch of Onion Creek is .41 miles to the west and there is an unnamed intermittent drainage pathway .15 miles to the northeast (Reference 10). There are no public land uses, drinking water intakes within 15 miles downstream, parks, wetlands or endangered species in the area.

MRI's drainage area is less than 20 acres (Figure 1). The average annual stream flow of Onion Creek is 66,930 acre feet per second (Reference 13). The two year, 24 hour rainfall is five inches (Reference 14).

D. On-Site Pathway Characteristics

The site is accessible by Ranch Road 2770 (Reference 10). The known contaminant is chromium. Waste was contained in an evaporation pond (Reference 1).

V. Targets

MRI has been remediated and no contamination persists. Therefore, an assessment of air migration, surface water migration and on-site migration is unnecessary. Ground water contamination has been disclaimed with analytical data (Reference 3; Reference 10).

VI. Conclusions

MRI is an inactive facility. Chromium was detected in an on-site evaporation pond. The pond was remediated and analytical data manifest that the contamination has been removed. Tests for ground water contamination are negative (Reference 1; Reference 3; Reference 10). MRI awaits clean closure verification (Reference 5).

ecology and environment, inc.
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International Specialists in the Environment

M E M O R A N D U M

TO: Ed Sierra, Region VI RPO

THRU: K. H. Malone, Jr., FITOM

FROM: FOR Kurt Soutendijk, FIT Chemist

DATE: January 16, 1990

TDD: F06-8908-36
PAN: FTX1008PAA

SUBJECT: Preliminary Assessment for Monier Resources, Inc.
Buda, Hays County, TX (TXD981605835)

The prescore has been expunged from this Preliminary Assessment due to lack of a scoreable source (Reference 16).

REFERENCES

Reference Number	Description of the Reference
01	Clean-Closure Review. Prepared by Kearney/Centaur Division, A. T. Kearney, Inc. 225 Reinkers Lane, Alexandria, Virginia 22314. January 13, 1989.
02	Record of Communication. To: Texas Water Commission, Hazardous and Solid Waste Enforcement, Austin, Texas. 512/463-8425. From: Kurt Soutendijk, FIT Chemist. EPA Region VI. October 20, 1989.
03	Letter. To: Monex Resources. From: Texas Water Commission. Re: Ground Water Quality Assessment.
04	Notice of Executive Director's Preliminary Report and Petition for A Texas Water Commission Order Assessing Administrative Penalties and Requiring Certain Actions of Monier Resources, Inc. Registration Number 31842.
05	Record of Communication. To: Texas Water Commission, Hazardous and Solid Waste Enforcement, Austin, Texas. 512/463-8425. From: Kurt Soutendijk, FIT Chemist. EPA Region VI. October 26, 1989.
06	Relation of Water Chemistry of the Edwards Aquifer to Hydrology and Land Use. San Antonio Region, Texas. By Paul M. Buszkea, U.S. Geological Survey, Water-Resources Investigation Report 87-4116.
07	Hydrogeologic Sections of the Edwards Aquifer and Its Confining Units In the San Antonio Area, Texas. U.S. Geological Survey, Water-Resource Investigation Report 85-4259.
08	Memorandum. EPA Region VI. Sole Source Aquifers.
09	Summary Appraisals of the Nation's Ground Water Resources, Texas Gulf Region. By E. T. Baker, Jr. and J. R. Wall. Geological Survey Professional Paper 813-F.
10	Letter. To: Texas Water Commission. From: Raba-Kistner Consultants. Re: Monier Resources, Inc. August 18, 1989.
11	Soil Survey of Comal and Hays Counties, Texas, United States Department of Agriculture, Soil Conservation Service.
12	Record of Communication. To: Bob Spain. From: Kurt Soutendijk, FIT Chemist. EPA Region VI. Re: Monier Resources, Inc. November 30, 1989.
13	Water Resource Data, Texas Water Year, 1988, Volume 3 by H. D. Buckner, E.R. Cornilla, H.T. Davidson and W. J. Shelby. U.S. Geological Survey Water-Data Report TX-88-3.

REFERENCES

Reference Number	Description of the Reference
14	Herschfield, D.M., 1981. Rainfall Frequency Atlas of the United States. U.S. Weather Bureau Technical Paper No. 40.
15	Relation of Water Chemistry of The Edwards Aquifer to Hydrogeology and Land Use, San Antonio Region, Texas. U.S. Geological Survey, Water-Resources Investigation Report 87-4116. By Paul M. Buszka. 1987.

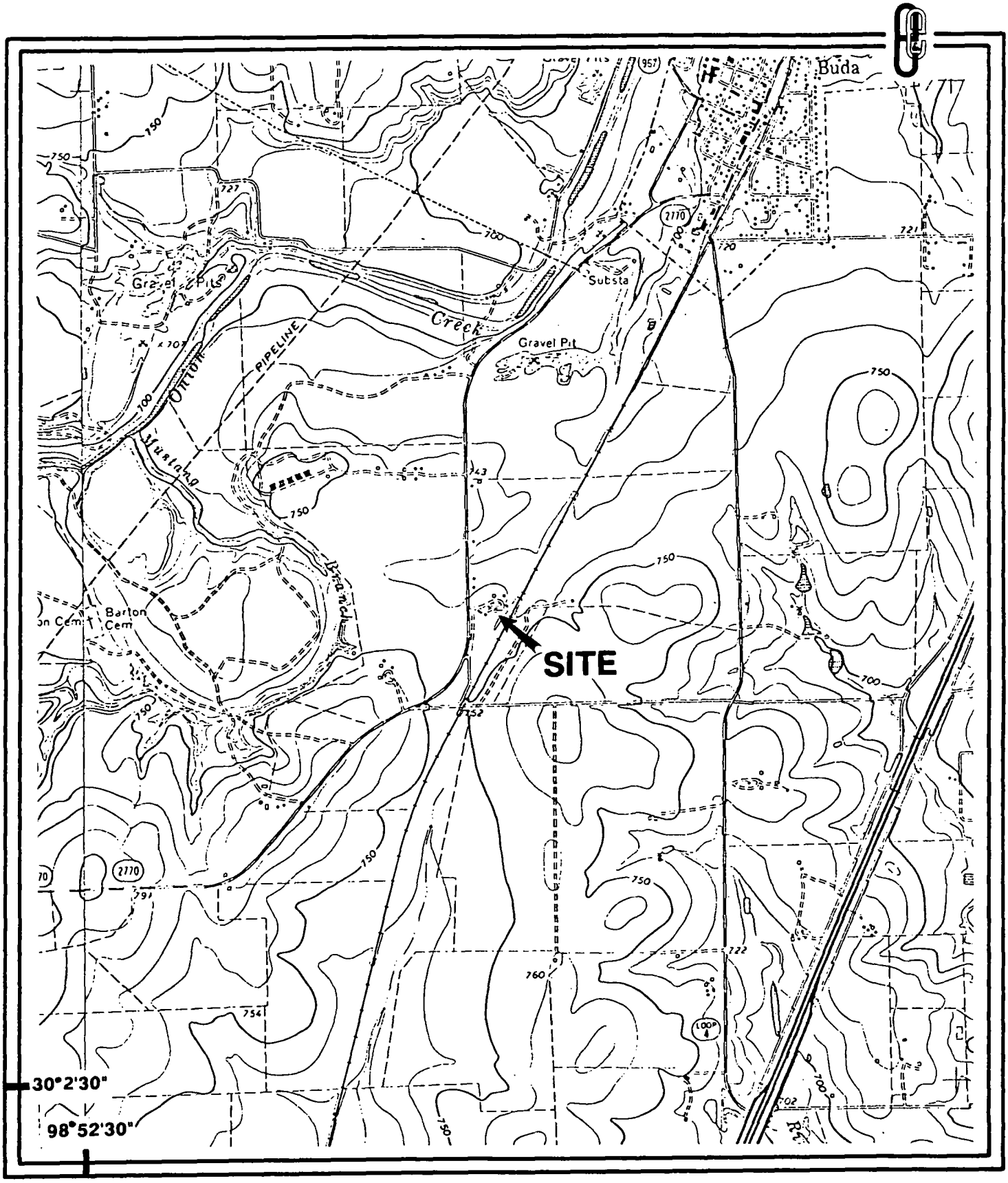

FIGURE 1
SITE LOCATION MAP
MONIER RESOURCES
BUDA, TEXAS
TXD981665835

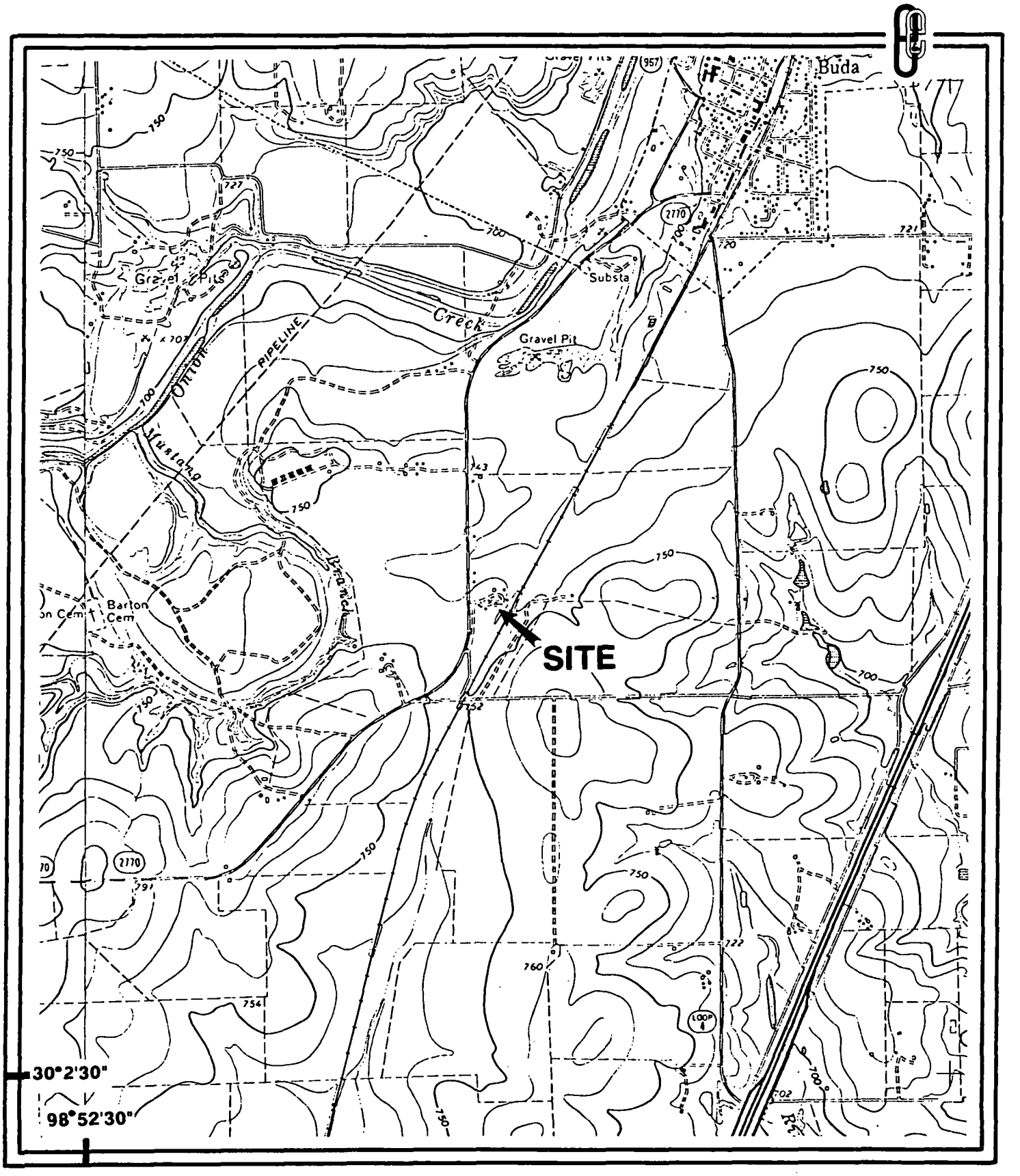

FIGURE 1
SITE LOCATION MAP
MONIER RESOURCES
BUDA, TEXAS
TXD981665835

FIGURE: 1

LEGEND

ROAD CLASSIFICATION

- Heavy-duty
- Medium-duty
- Light-duty
- Unimproved dirt
- Interstate Route
- U. S. Route
- State Route

N

REFERENCE: ___

ecology & environment, inc.

Site Name: MONIER RESOURCES
Location: BUDA, TEXAS
Site ID: TXD981665835

USGS TOPOGRAPHIC MAPS

		Quadrangle Location
Name: MOUNTAIN CITY, TX. Date: 1968 Revised: 1973 Contour Interval: 10 ft.	Name: BUDA, TX. Date: 1968 Revised: 1973 Contour Interval: 10 ft.	
Name: ___ Date: ___ Revised: ___ Contour Interval: ___	Name: ___ Date: ___ Revised: ___ Contour Interval: ___	

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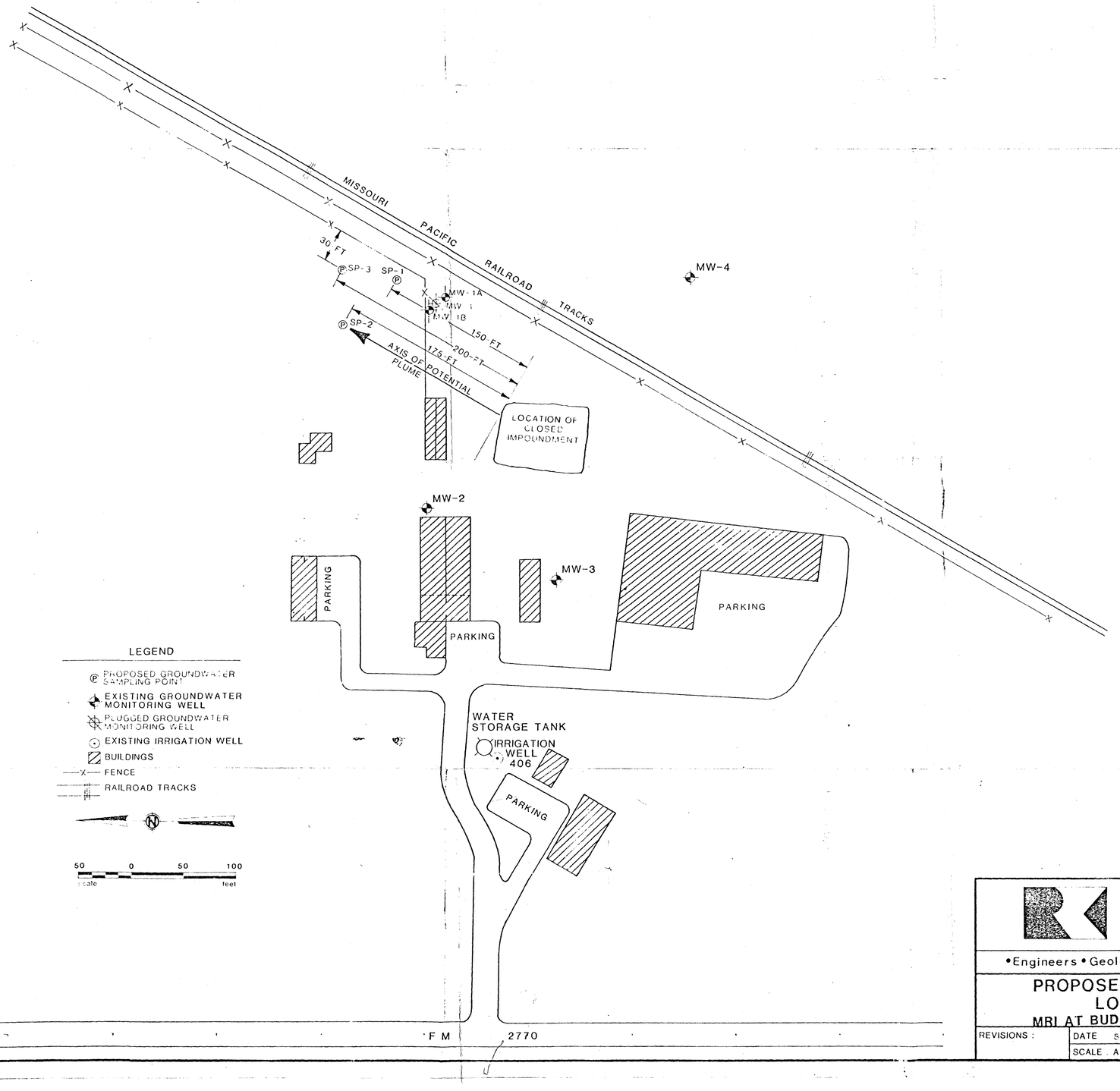
COMAL AND HAYS COUNTIES, TEXAS — SHEET NUMBER 29

COMAL AND HAYS COUNTIES, TEXAS — SHEET NUMBER 30



Raba-Kistner Consultants, Inc.

•Engineers •Geologists •Scientists •Chemists

PROPOSED SAMPLING POINT LOCATION MAP #31842

MBI AT BUDA HAYS COUNTY, TEXAS

REVISIONS :	DATE 8-17-88	PROJECT NO : 782-002-1
	SCALE : AS SHOWN	PLATE 1

Kearney/Centaur Division
A.T. Kearney, Inc.
P.O. Box 1438
225 Reinekers Lane
Alexandria, Virginia 22313
703 683 7932

Management
Consultants

I.D.S.

REFERENCE: †

January 13, 1989

ATKEARNEY

Mr. Thomas D. Clark
Regional Project Officer
Region VI
U.S. Environmental Protection Agency
1445 Ross Avenue
Dallas, TX 75202-2733

Reference: EPA Contract No. 68-01-7374; Work Assignment No. R26-02-20; Clean-Closure Reviews, Texas Facilities; Delivery of Three Clean-Closure Reviews

Dear Mr. Clark:

Enclosed are the following clean-closure reviews for the above-referenced work assignment:

- Monier Resources, Inc., EPA I.D. No. TXD981605835;
- City Public Service San Antonio City - Leon Creek Road Power Plant, EPA I.D. No. TXD000815035; and
- Fish Engineering & Construction, Inc., EPA I.D. No. TXD980626121.

Please note, the reports may differ slightly in style due to the fact that we have used various staff to prepare them.

We will be sending you another batch of reviews in the next few weeks. In the meantime, please feel free to call me or Dorothy La Russo, the Work Assignment Manager (who can be reached at 703/683-7932), if you have any questions.

Sincerely,

Arthur Glazer

Arthur Glazer
Technical Director

Enclosures

cc: V. Cammack, EPA Region VI
J. Levin
D. Bean
D. La Russo
A. Schaffer (letters only)

Kearney/Centaur Division
A.T. Kearney, Inc.
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Management
Consultants

W.D.S.

January 13, 1989

AT KEARNEY

Mr. Tom Clark
Regional Project Officer
U.S. Environmental Protection Agency
Region VI
1445 Ross Avenue
Dallas, Texas 75202-2733

Reference: EPA Contract No. 68-01-7374; Work Assignment No. R26-02-20; Monier Resources, Inc.; Buda, Texas; EPA I.D. No. TXD981605835; Clean-Closure Review; Final Deliverable

Dear Mr. Clark:

Enclosed please find the review of the State's Interim Status Clean-Closure determination for Monier Resources, Inc. (MRI), located on Ranch Road 2770, two miles south of Buda, Texas. This project called for the Kearney Team to review information in the State of Texas files that the State is using in making a determination to allow clean-closure at the MRI facility. This review briefly discusses the background of the unit that is undergoing closure and describes the documentation for the closure process. Project deliverables include the following:

- o A report documenting the findings of the review.
- o The completed checklist (including general and unit-specific information).

The checklist uses two codes: N/A and NIF. N/A is used for items not considered applicable. NIF is used for items where information appears to be required, or may help characterize the adequacy of the procedures used to close a unit, but was not found in the file. As you requested, the checklist is handwritten not typed.

As you requested, we reviewed the files and closure plan for compliance with 40 CFR 264 and 265, as appropriate, EPA's interpretation of clean closure as described in the Federal Register (52 FR 8704, March 19, 1987), and other relevant policies and guidances.

The primary information sources for the review are included in a reference list at the end of the checklist.

The surface impoundment (also referred to as the evaporation pond) is the only documented unit which is undergoing closure at the MRI facility. The Texas Water Commission (TWC) approved the closure plan on

October 13, 1986. However, the approved closure plan was not contained in the reviewed file material. The enclosed closure plan review is based on the initial closure plan submission (dated February 6, 1986) and two supplements to that plan (dated May 28, 1986 and July 1, 1986). According to correspondence in the file material, the wastewater and sludge in the impoundment, impoundment liner, and some soil surrounding the impoundment have been removed and disposed of off site. Also, verification monitoring of the soil in the area of the impoundment has been conducted.

A certification of closure was not contained in the reviewed file material, presumably because the closure is not yet complete. TWC has required MRI to conduct a Ground Water Quality Assessment (GWQA) for the surface impoundment based on measurements of chromium in downgradient monitoring wells which exceeded the maximum contaminant limit (MCL). TWC will not consider closure to be complete until the chromium plume is adequately defined, so that appropriate actions may be taken (e.g., corrective action, if necessary). Because ground-water monitoring is apparently still underway, it is not possible at this time to assess whether the surface impoundment has achieved clean-closure.

Other solid waste management units and areas of concern were identified during the file review, including two drum "warehouses," an area of "ground contamination" approximately 50 feet northwest of the surface impoundment, a wastewater sump, a sump "bypass area," and an area containing buried sludge. A discussion of these units and areas of concern is included in the report.

If you have any questions or desire any additional information, please do not hesitate to call me or Dorothy La Russo, the Work Assignment Manager (who may be reached at 703/683-7932).

Sincerely,

Arthur Glazer
Technical Director

Enclosures

cc: V. Cammack, EPA Region VI
J. Levin
D. Bean
D. La Russo
A. Schaffer (letter only)

II.D.5.

CLEAN-CLOSURE REVIEW

Monier Resources, Inc.
Ranch Road 2770
Buda, Texas

EPA I.D. No. TXD981605835

Prepared for:

U.S. Environmental Protection Agency
Region VI
1445 Ross Avenue
Dallas, Texas 75202-2733

Prepared by:

Kearney/Centaur Division
A.T. Kearney, Inc.
225 Reinekers Lane
Alexandria, Virginia 22314

Contract No. 68-01-7374
Work Assignment No. R26-02-20

January 1989

MONIER RESOURCES, INC.
TWO MILES SOUTH OF BUDA, TEXAS
EPA I.D. NO. TXD981605835

I. DESCRIPTION OF FACILITY

The Monier Resources, Inc. (MRI) facility is located on County Road 2770, two miles south of Buda, Texas in Hays County. MRI manufactures organic based admixtures that are used by the cement industry. Admixtures are liquid chemical solutions used in making concrete. Admixtures are mixed with the other constituents of concrete (cement, sand, gravel and water) to impart certain desirable properties to concrete. The company manufactured admixtures at the facility from December 1980 through mid-December 1985 (Reference 25). The unit which is undergoing closure at this facility is a surface impoundment (also referred to as the evaporation pond in the reviewed file material).

II. SURFACE IMPOUNDMENT

The impoundment was used for disposal of admixture wastewater solution generated from the cleaning of the various admixture stationary tanks and tank trucks by flushing with water (References 2, 25). The impoundment was active between December 1980 and November 1985 (Reference 47).

The surface impoundment was initially considered by the Texas Water Commission (TWC) and MRI to be a non-hazardous waste management unit in January 1982 (Reference 13). MRI had intended to close its admixture operations at the Buda site, including the impoundment, and move the operations to San Antonio, Texas. However, prior to closure of the facility, TWC took samples on November 6, 1985, which indicated that the wastewater in the impoundment was characteristically hazardous due to an EP toxicity chromium concentration of 5.920 mg/l. (The maximum concentration for EP toxicity for chromium is 5 mg/l). On December 3, 1985, TWC and MRI split a wastewater sample from the impoundment. The TWC sample showed an EP toxicity chromium concentration of 4.35 mg/l (the laboratory indicated that the low value was probably due to

laboratory error). MRI's sample showed an EP toxicity chromium concentration of 7.61 mg/l. Further sampling by TWC on January 10, 1986, showed the wastewater in the impoundment to be hazardous due to an EP toxicity chromium concentration of 7.31 mg/l (Reference 25).

Conc.

IC The impoundment is approximately 96 feet by 87 feet. Based on field data collected on November 19, 1985, the total volume of the impoundment contents was approximately 320,000 gallons, with a sludge volume estimated at approximately 50,000 gallons (Reference 25).

Vol.

The presence of chromium in the wastewater was traced to the use of potassium dichromate as a constituent of certain admixture products beginning in 1983 (Reference 28). Due to the presence of characteristic hazardous waste in the impoundment, the unit was reclassified by TWC as a regulated unit.

TWC subsequently met with MRI representatives, and MRI was instructed to submit a closure plan for a hazardous waste management unit (i.e., the surface impoundment), to provide financial assurance for closure, and to install a ground-water monitoring system (Reference 10). A discussion summarizing the key events and closure activities between February 7, 1986 and September 19, 1988 is provided below.

The wastewater in the impoundment was treated with a flocculent within the unit to precipitate out the chromium, prior to removal and shipment of the wastewater to the City of San Antonio (CSA) industrial wastewater facility. The disposal of the treated wastewater into the CSA disposal system was reportedly approved by CSA in a letter (Reference 20). This letter was not contained in the reviewed file material.

The sludge component in the impoundment was solidified with fly ash and cement. The stabilized sludge, the impoundment liner, and some soil surrounding the impoundment were removed and disposed of at the City of Austin Type 1 municipal solid waste facility. (The reason for removing the soil was not apparent from the file.) Prior to disposal, a total of four samples of

the sludge were tested for chromium EP toxicity prior to, during, and after removal of the treated wastewater; a sample of the stabilized sludge was also analyzed. All sludge sample results showed EP toxicity chromium concentrations to be below the EP toxicity maximum concentration (References 24, 25, 51).

Soil sampling and analysis were conducted to verify the impoundment clean-up after removal of the wastewater and sludge, the impoundment liner, and the soil surrounding the impoundment. The approved Closure Plan reportedly designated three sample locations within the impoundment and three locations outside of the impoundment for soil sampling. (The October 13, 1986 approved Closure Plan was not contained in the reviewed file material.) Those sampling locations are reportedly included on Attachment 1 of the approved Closure Plan, according to Reference 51. Twenty-six soil samples were collected near the aforementioned locations within and around the surface impoundment. The specific locations are reportedly shown in Attachments 1 and 3 of the approved Closure Plan, according to Reference 51. Sample locations included two samples from the walls of the impoundment and one sample from six inches below the impoundment bottom; the other samples taken in and around the impoundment were designated as "surface" or "subsurface" (Reference 51).

The 26 soil samples were analyzed for chromium EP toxicity and all results were below the EP toxicity maximum concentration (Reference 51). Fifteen test results were identified in the reviewed file material (Reference 51). The other 11 test results are reportedly contained in Attachment 3 of the approved Closure Plan, according to Reference 51.

Monitoring of ground water at the unit was required by TWC after it had been established that the impoundment contained hazardous waste. Monitoring of ground water in the shallow aquifer underlying the impoundment revealed downgradient chromium concentrations in excess of the maximum contaminant level (MCL) (References 22, 37, 57). The MCL for chromium is 0.05 mg/l. TWC subsequently ordered MRI to perform a Ground Water Quality Assessment (GWQA) to determine the extent of contamination associated with the impoundment

(Reference 25). The most recent sampling results contained in the reviewed file material for the GWQA were submitted to TWC on September 19, 1988 (Reference 62). It is not known whether the GWQA has been completed, based on the reviewed file material. However, TWC has notified MRI that "...the closure standard of 40 CFR 265.111 requires that the facility be closed in a manner that controls, minimizes, or eliminates, to the extent necessary to protect human health and the environment, post-closure escape of hazardous constituents to the ground or surface waters. This standard has not been met if a plume of water containing chromium above the Primary Drinking Water Standard (0.05 mg/l) still exists." TWC has required MRI to revise its Ground Water Quality Assessment Plan to describe procedures to determine the rate and extent of migration of the contaminant plume containing chromium above 0.05 mg/l, if such a plume still exists. Furthermore, if such a plume does still exist, TWC has stated to MRI that further assessment and corrective action may be required (Reference 57).

The preceding discussion of closure-related events and activities at the surface impoundment is based on the contents and implementation of the initial MRI Closure Plan (dated February 7, 1986) and Closure Plan supplements (dated May 28, 1986 and July 1, 1986). As mentioned previously, the approved Closure Plan was not contained in the reviewed file material. TWC approved the Closure Plan on October 13, 1986 (Reference 35).

A closure certification was not contained in the reviewed file material, presumably because the Ground Water Quality Assessment of the chromium plume has not been completed. However, according to Reference 49, TWC notified MRI in a letter (dated December 16, 1987) to submit the closure certification by December 31, 1987. The impoundment site has been filled with on-site soils and graded to promote drainage of rainfall runoff (Reference 51).

Based on the review of the file material, the following points can be made at this time with respect to the adequacy of the Closure Plan and its implementation:

- Health-based criteria for soil ingestion were not applied to the verification samples to confirm the adequacy of the removal of the impoundment contents, the impoundment liners, and some of the surrounding soils;

- It is not clear which sampling strategy (e.g., simple random sampling) was selected for the verification soil sampling;

- Specific soil sampling locations and depths could not be identified;

- There is inadequate information on how all equipment used in the closure activities was decontaminated; and

- A detailed sampling and analysis plan for verification of the removal of any contaminated soil was not contained in the file material.

III. OTHER UNITS AND AREAS OF CONCERN

Inspections of the MRI facility by the Texas Department of Water Resources (TDWR)/TWC revealed other solid waste management units and areas of concern, including two warehouses for storing waste drums, an area of "ground contamination" approximately 50 feet northwest of the surface impoundment, a wastewater sump, and an area containing buried sludge (References 1, 2, 13, 15).

TDWR noted that an area containing buried sludge was leaching to surface waters. Analyses of the leachate and buried sludge by TDWR in January 1982 indicated high levels of various indicator parameters of organics and inorganics, as well as "somewhat elevated" levels of chromium, copper, lead and zinc. Based on these analyses, TDWR instructed MRI to clean up the area containing buried sludge (References 1, 2). The file material did not contain adequate details to evaluate MRI's response. TDWR also noted a bypass area

located near the wastewater collection sump. During an inspection on January 15, 1982, TDWR observed wastewater bypassing the surface impoundment and discharging to a drainage ditch along the eastern edge of the facility. TDWR samples of the discharging wastewater indicated that it was non-hazardous (References 1, 2, 13). However, the sampling results were not contained in the reviewed file material. It is not known whether samples of sediment from the drainage ditch were taken. TDWR instructed MRI to eliminate the bypass problem (Reference 1).

During an inspection on January 10, 1986, TWC observed an area of "ground contamination" approximately 50 feet northwest of the surface impoundment. TWC samples indicated that this area was hazardous due to high levels of chromium (Reference 15). Details on the cleanup of this area were not contained in the reviewed file materials.

TWC also took samples of the concrete sump which collects wastewater from the manufacturing area. This sump discharges wastewater to the surface impoundment. The results of the sump samples indicated that the wastewater was not EP toxic for chromium, but did contain elevated levels of total chromium (Reference 15). No other constituents, other than chromium, were analyzed. Details on the decontamination and removal of the sump were not contained in the reviewed file material.

During a 1986 inspection, TWC observed approximately 120 drums of waste materials stored at the MRI facility, primarily in two "warehouses." Two of the drums were sampled by TWC for total chromium and chromium EP toxicity. The results showed that the samples were not EP toxic for chromium, but did contain total chromium, ranging from 0.91 to 20 mg/l (References 13, 15). Details on the disposition of the waste drums were not contained in the file material.

According to recommendations stated in a TWC interoffice memorandum, MRI's Closure Plan should address the surface impoundment, drum storage areas, and all contaminated soil (Reference 13). This would suggest that the other solid

waste management units and areas of concern described previously in this section should be addressed by MRI's Closure Plan. However, the file material reviewed only provided a detailed description of the surface impoundment closure.

CHECKLIST TO EVALUATE
STATE CLEAN-CLOSURE DETERMINATIONS
IN EPA REGION VI

(Complete Sections I through IV for Entire Facility)

I. GENERAL INFORMATION

A. Facility Name: Marion Resources, Inc. (MRI)

B. EPA I.D. No.: TXD981605835

C. Address: Ranch Road 2770; 2 miles south of Buda, Texas

D. Check the type of unit/units closed or proposed to be closed and indicate the number of each type of unit that is being reviewed:

- (X) Surface Impoundment 1
- ( ) Landfill ____
- ( ) Waste Pile ____
- ( ) Container Storage ____
- ( ) Tank ____
- ( ) Land Treatment ____
- ( ) Other (Describe) ____

II. INFORMATION SOURCE(S)

A. Check type of materials reviewed in completing the evaluation and provide the date of the documents:

- ( ) Part A Permit Application ____
- ( ) Part B Permit Application ____
- (X) Interim Status Closure Plan (References 14, 20, 24)
- ( ) RCRA Permit ____
- ( ) RCRA Facility Assessment ____
- ( ) Closure Certification ____
- (X) CME Report (Reference 47)
- ( ) Consent Agreement ____
- (X) Sampling Results (References 6, 7, 8, 9, 15, 17, 18, 19, 39, 62)

CHECKLIST TO EVALUATE
STATE CLEAN-CLOSURE DETERMINATIONS
IN EPA REGION VI

II. INFORMATION SOURCE(S) (Cont'd)

A. Check type of materials reviewed in completing the evaluation and provide the date of the documents (Cont'd):

(X) Other Correspondence (Describe) internal memos, conference records, phone records

(X) Other Materials (Describe) Proposed Order, Ground Water Quality Assessment Plan and results, plus other references (see Reference List)

B. Briefly summarize interviews with Region and/or State personnel. Include the name(s) of the personnel interviewed and the date:

Interviews were not conducted with Region and/or State personnel

III. ENVIRONMENTAL SETTING

A. Source of Data - Cite Reference Noted in Section II: (References 20, 37, 47)

B. Surface Water

(1) Annual Precipitation: 34 inches (rainfall)

(2) Annual Evaporation: 63 inches

(3) Net Annual Precipitation: NIF*

(4) Distance to Nearest Surface Water and Description: Mustang Branch of Onion Creek approx. 2000 feet west of facility and Onion Creek approx. 3/4 mile north of facility

* NIF = no information found.

CHECKLIST TO EVALUATE
STATE CLEAN-CLOSURE DETERMINATIONS
IN EPA REGION VI

III. ENVIRONMENTAL SETTING (Cont'd)

B. Surface Water (Cont'd)

(5) Describe Facility Slope and Intervening Terrain: Facility land/terrain slope northeastward to the drainage ditch on the northwest side of the railroad tracks. Drainage ditch slopes north to a stream which flows into Onion Creek.

C. Geology

(1) Describe Soil Type:

( ) Cohesionless

(X) Cohesive (predominantly)

(2) Predominant Soil Type in Accordance with USCS Classification System:

( ) Clay

( ) Silty Clay

( ) Sandy Clay

( ) Clayey Silt/Clayey Sand

( ) Sandy Silt

(X) Other (gravelly loam underlain by chalk)

(3) Test Results of Permeability: NIF; although Reference 47 indicates that soil permeability is moderate.

( ) Less than $1x10^{-7}$ cm/sec

( ) Greater than $1x10^{-7}$ cm/sec

(4) Test Procedures: Laboratory NIF; Field NIF

Describe: _____

(5) Is there consistency in test results of permeability? NIF

( ) Yes ( ) No

Describe inconsistency(ies) _____

_____

(6) Soil Stratification:

( ) Interbedded Soil Layers

( ) Continuous Layer

( ) Discontinuous Soil Horizon

(X) Other (Surface layer of clay with some gravel to a depth of 9-14 inches underlain by chalk)

CHECKLIST TO EVALUATE
STATE CLEAN-CLOSURE DETERMINATIONS
IN EPA REGION VI

III. ENVIRONMENTAL SETTING (Cont'd)

D. Hydrogeology

(1) Source of data - cite reference noted in Section II: (References 14, 37, 47)

(2) Depth to ground water: Feet 1-33; Elevation 65-103 feet

(3) Direction of ground-water flow: Northeast (for shallow aquifer)

(4) Is the site's ground water flow direction different from regional flow direction? (X) Yes ( ) No (Regional flow is east-southeast)

(5) If no, flow direction is altered because of:

( ) Drawdown induced by pumping

( ) Topographic features

( ) Structural features

(X) Other(s) (Describe) Direction differs in deeper aquifer due to stratigraphy.

(6) Presence of monitoring wells on site? (X) Yes ( ) No

(7) If yes, have unit specific constituents been detected?

(X) Yes ( ) No

Indicate last sampling date: 7/22/88

(8) Is contamination statistically significant? NIF

( ) Yes ( ) No

(9) Are primary drinking water standards exceeded?

(X) Yes ( ) No

If yes, indicate constituents and levels detected: Chromium (0.38 mg/L); Lead (0.14 mg/L); cadmium (0.02 mg/L)

(10) Are secondary drinking water standards exceeded?

(X) Yes ( ) No

If yes, indicate constituents and levels detected: Manganese (0.51 mg/L); TDS (918 mg/L); Chloride (602 mg/L); iron (3.92 mg/L)

E. Receptor

(1) Source of data - cite reference noted in Section II: (References 20, 37)

(2) Population within one-mile radius: NIF

CHECKLIST TO EVALUATE
STATE CLEAN-CLOSURE DETERMINATIONS
IN EPA REGION VI

III. ENVIRONMENTAL SETTING (Cont'd)

E. Receptor (Cont'd)

(3) Population within three-mile radius: NIF; Buda is approx two ^ miles north of the facility

(4) Source and distance of potable water supply:

( ) Surface water

(X) Municipal wells

(X) Private well

There is a potable well approx. 400 feet from the impoundment (Reference 4). There are 28 water wells located near the facility (Reference 37)

(5) Indicate depth to aquifer supplying drinking water: 70-130 feet; Edwards aquifer

(6) Indicate endangered species in the area: NIF

IV. HEALTH AND SAFETY PROCEDURES

A. Is proposed decontamination of construction equipment described in sufficient detail? ( ) Yes (X) No

If no, describe specific deficiencies: No description of decontamination steps; does not specify criteria for determining extent of decontamination.

B. Is rinsate disposal adequately described?

( ) Yes (X) No

CHECKLIST TO EVALUATE
STATE CLEAN-CLOSURE DETERMINATIONS
IN EPA REGION VI

(Complete Sections V through IX for Each Unit Under Review)

V. UNIT DESCRIPTION

A. Type of Unit:

- (X) Surface Impoundment
- ( ) Landfill
- ( ) Waste Pile
- ( ) Container Storage
- ( ) Tank
- ( ) Land Treatment
- ( ) Other

B. Name, location or other information to identify the unit: Surface Impoundment (also referred to in files as Evaporation Pond).

C. Regulatory Basis for Closing the Unit (May Be More Than One):

- (X) 40 CFR 265
- ( ) 40 CFR 264
- ( ) Consent Agreement
- (X) Waste accepted to the unit prior to July 26, 1982
- (X) Waste accepted to the unit after July 26, 1982
- (X) Unit closed after January 26, 1983 *

D. Did the State perform a site visit? (X) Yes ( ) No

If yes, indicate the name of the person conducting site visit, date and nature of the visit: (See References 1, 2, 38, 39, 50)

Summarize key findings of the visit including the status of clean-closure activity:: Visits were to collect or observe collection of samples of surface impoundment wastewater, sludge, underlying and surrounding soils, and ground water. *

E. Closure Plan Approval Date by the State: 10/13/86; Final Closure Plan not in file material. (GWQA)

* Unit still conducting Ground-Water Quality Assessment in lieu of closure activities to demonstrate compliance

CHECKLIST TO EVALUATE
STATE CLEAN-CLOSURE DETERMINATIONS
IN EPA REGION VI

V. UNIT DESCRIPTION (Cont'd)

F. Closure Certification: ( ) Yes (X) No Schedule

If no, indicate schedule for Closure Certification: depends on results of Ground Water Quality Assessment (e.g., need for corrective action).

G. Is Closure Certification by a: N/A+

( ) Professional Engineer

( ) Independent Engineer

( ) Plant Engineer

( ) Other Person _____

H. Is Closure Certification approved by the State? N/A

( ) Yes ( ) No

If no, describe the basis for non-approval: _____

_____

I. Dimensions of Unit

(1) Dimensions: Length 96', Width 87', (oblong shape) Depth 11'6" (from top of berm to bottom of unit)

(2) Year of Construction:

Start-Up Date 12/80

Inactive Date 11/85

Closure Date closure still in progress

(3) Was a Liner(s) Required: ( ) Yes ( ) No NIF*

(4) If Yes, Liner Type and Brief Description: *

( ) Liner not installed, as required

( ) Clay liner _____

( ) Geomembrane liner _____

( ) Combination of clay and geomembrane liner _____

_____

( ) Other liner (Describe) _____

Briefly describe, the appropriateness of the liner for the site: _____

_____

+ Not applicable

* The liner system was comprised of a top layer of one foot of compacted clay, over one foot of sand over two feet of [illegible] clay. The [illegible] to collect [illegible] detection system

↑ 6 overflow pipe.

CHECKLIST TO EVALUATE
STATE CLEAN-CLOSURE DETERMINATIONS
IN EPA REGION VI

V. UNIT DESCRIPTION (Cont'd)

J. Physical Status of the Unit:
(1) Thickness of liner(s) See footnote to item V. I. (3)
(2) QA/QC documentation NIF *
(3) Briefly describe any problems identified with the liner: NIF; however ground-water monitoring indicates that the unit has leaked to the perched aquifer

K. History of Compliance/Enforcement Problems: (X) Yes ( ) No

L. If Yes, Describe Compliance/Enforcement Action: TWC issued order to MRI for various closure and other violations (see References 13 and 25 for details)

M. Documents Reviewed by the State: NIF
Design Plan ( ) As Built Drawings ( )
Briefly discuss the adequacy of these documents: _____

N. State's Basis for Approval of Clean-Closure: Closure still in progress. MRI must show that there is no longer ground-water contamination that poses a threat to human health or the environment.

O. Describe proposed final use in the area of the unit: Landowner (Texas Lehigh Cement Company) wants to lease property to a new industrial tenant.

VI. WASTE CHARACTERIZATION

A. Source of Data - Cite Reference Noted in Section II: (References 2, 3, 28, 40, 44)

* Reference 4 states that there are two soil tests on record that reveal that the remolded soil meets guideline criteria for liner material for an impoundment. - 8 - However, the test results and

CHECKLIST TO EVALUATE
STATE CLEAN-CLOSURE DETERMINATIONS
IN EPA REGION VI

VI. WASTE CHARACTERIZATION (Cont'd)

B. Waste Managed

( ) Listed Waste (Describe Waste or Waste Types): _____

(X) Characteristics

( ) Ignitability

( ) Corrosivity

( ) Reactivity

(X) Toxicity EP Tox for chromium

(X) Appendix VIII Hazardous Constituents (Describe) Chromium is contained in potassium dichromate

( ) Other hazards that pose a threat to public health and the environment (Describe) NIF

C. Quality Control procedures used in testing: ( ) Yes ( ) No NIF

D. If yes, were the procedures used adequate? ( ) Yes ( ) No

If no, describe deficiencies: NIF; however, file material refers to use of TWC and EPA analytical methods.

VII. WASTE REMOVAL/DECONTAMINATION

A. Source of Data - Cite Reference Noted in Section II: (References 14, 37, 38, 50, 57)

CHECKLIST TO EVALUATE
STATE CLEAN-CLOSURE DETERMINATIONS
IN EPA REGION VI

VII. WASTE REMOVAL/DECONTAMINATION (Cont'd)

B. Cleanup Standards

(1) Cleanup standards used:

( ) Background

(X) Health based (MCL for chromium in ground water)

(X) Other (Describe) EP Toxicity for chromium in soils; (B)

(2) Who established cleanup standards?

(X) State

( ) EPA

( ) Proposed by Applicant

(3) Basis for determining cleanup criteria: EP Toxicity for chromium in wastewater, sludge; underlying and surrounding soils. MCL for chromium in ground water

(4) Describe any numerical standards that were used to establish cleanup criteria: MCL for chromium (0.05 mg/L); EP Toxicity limit for chromium (5 mg/L)

(5) Explain the adequacy of cleanup criteria: Soil tests for EP Toxicity for chromium do not consider health-based criterion for ingestion

(6) Indicate Quality Assurance/Quality Control procedures used in establishing cleanup criteria: NIF

C. Waste Removal

(1) How was waste disposed? Wastewater was treated in unit, and transported to City of San Antonio industrial wastewater facility (A)

(2) Manifest for material moved off site: ( ) Yes ( ) No NIF

D. Liner, associated piping and contaminated subsoil removal:

(1) Source of data - cite reference noted in Section II: (Reference 50, 51)

(A) for final treatment and discharge. Sludge was stabilized with fly ash and cement within the unit prior to disposal at a Type I municipal solid waste facility in Austin.

(B) all surrounding and underlying contaminated soil shall be removed or demonstrated to not be hazardous waste; 10 other post-closure care

CHECKLIST TO EVALUATE
STATE CLEAN-CLOSURE DETERMINATIONS
IN EPA REGION VI

VII. WASTE REMOVAL/DECONTAMINATION (Cont'd)

D. Liner, associated piping and contaminated subsoil removal (cont'd):

(2) Geomembrane liner: N/A

( ) Removal off site

( ) Decontamination (treated)

( ) Disposal on site after treatment

Describe decontamination procedure: _____

(3) Soil/clay liner:

(X) Removal off site

( ) Decontamination (treated)

( ) Disposal on site after treatment)

Describe decontamination procedure: liner was apparently never tested to determine if decontamination was necessary.

(4) Sampling scheme to characterize contamination in underlying soil: No defined scheme can be ascertained from the file material. Twenty six soil samples

( ) Systematic were taken from in and around the excavated

( ) Random impoundment and tested for EP Toxicity for chromium.

(5) How was material disposed off site? The sludge, liner, and some surrounding soil were disposed at the City of Austin Type I municipal solid waste facility.

(6) Manifest for material moved off site: ( ) Yes ( ) No NIF

(7) Contaminated subsoil testing for waste constituents?

(X) Yes ( ) No

(8) Is location of background soil sampling correct?

( ) Yes ( ) No NIF; it could not be determined from the file material if background samples were taken.

If no, describe the deficiences: _____

(9) Nature of soil samples tested:

(X) Grab

( ) Composite (unknown)

Indicate depth of soil sampled: Two samples were taken from walls of excavated impoundment; one sample from 6 inches below bottom - 11 - of impoundment; other samples

CHECKLIST TO EVALUATE
STATE CLEAN-CLOSURE DETERMINATIONS
IN EPA REGION VI

VII. WASTE REMOVAL/DECONTAMINATION (Cont'd)

D. Liner, associated piping and contaminated subsoil removal (cont'd):

(10) Is contamination of underlying soil adequately described?

( ) Yes (X) No

If not, describe deficiencies: Sample results for total chromium in and around the removed impoundment should have been evaluated by applying EPA health-based criteria for soil ingestion.

(11) Decontamination/removal of leachate collection/removal system:

( ) Yes ( ) No N/A

E. Waste Removal from Surface Impoundment:

(1) Source of data - cite reference noted in Section II (References 14, 37, 38, 50, 51)

(2) Were liquid and sludges treated and/or stabilized?

liquid treated; sludge stabilized

(3) Was procedure for removal of any liquid waste adequate?

(X) Yes ( ) No

(4) Describe liquid waste removal procedure and name of facility accepting waste: Removed by pumping into tank trucks. Treated wastewater was transported to City of Antonio industrial wastewater facility for final treatment and discharge

(5) Was the plan for handling sludge adequate?

(X) Yes ( ) No

If no, describe deficiencies: _____

(6) Manifest for off-site waste: ( ) Yes ( ) No NIF

F. Cleanup of Ground Water:

(1) Describe how potential contamination of ground water was addressed as a part of clean closure: TWC has required MRI to perform a Ground Water Quality Assessment to define the extent and location of the chromium plume. The assessment was still ongoing as of 9/19/88.

CHECKLIST TO EVALUATE
STATE CLEAN-CLOSURE DETERMINATIONS
IN EPA REGION VI

VII. WASTE REMOVAL/DECONTAMINATION (Cont'd)

F. Cleanup of Ground Water (Cont'd):

(2) Did the unit have ground water monitoring wells?

(X) Yes ( ) No

If no, did the Agency issue a waiver? ( ) Yes ( ) No

If yes, did the wells detect waste constituents?

(X) Yes ( ) No

(3) Is ground water monitoring required under clean closure?

(X) Yes (Required by TWC at the unit) ( ) No

(4) Describe how the potential for release of waste constituents into the ground water was reconciled as a part of clean closure: N/A because ground-water contamination was found.

VIII. OTHER CONSIDERATIONS

A. Describe any other available criteria used for the unit: NIF

B. Was the clean-closure of the unit affected by the financial condition of the facility? ( ) Yes ( ) No N/A *

C. Did the unit's location with respect to population affect the closure of the unit? ( ) Yes ( ) No NIF

If yes, describe:

D. Was the unit's closure approvals affected by local constraints?

( ) Yes ( ) No NIF

If yes, describe the circumstances:

* Closure not yet completed.

CHECKLIST TO EVALUATE
STATE CLEAN-CLOSURE DETERMINATIONS
IN EPA REGION VI

IX. OTHER COMMENTS

- It is not clear which sampling strategy was selected for the verification soil sampling.
- Specific soil sampling locations and depths could not be identified.
- There is inadequate information on equipment decontamination.
- A detailed sampling and analysis plan for verification of the removal of any contaminated soil was not contained in the file material.
- Written confirmation from the City of San Antonio indicating its acceptance of the treated wastewater was not contained in the file material.

X. REFERENCES

1. Letter from Texas Department of Water Resources (TDWR) to Monier Resources, Inc. (MRI), Solid Waste Inspection of MRI Facility, April 29, 1982.

2. TDWR Interoffice Memorandum, Solid Waste Inspection of MRI Facility, April 29, 1982.

3. Letter from MRI to TDWR, Impoundment Waste Analysis and Classification, June 30, 1982.

4. Letter from MRI to TDWR, Information on Wastewater Impoundment, December 14, 1982.

5. TDWR Notice of Registration for MRI Facility, May 30, 1985.

6. Texas Water Commission (TWC) Wastewater Impoundment Sampling Results, November 6, 1985.

7. Results of Wastewater Pond Samples, November 6, 1985 and December 3, 1985.

8. TWC Wastewater Pond Sampling Results, December 3, 1985.

9. Texas Department of Health GC/MS Analysis Report, EPA Priority Pollutants, Wastewater Samples, December 5, 1985.

10. TWC Conference Record, December 11, 1985.

11. TWC Photos of MRI Facility, January 10, 1986.

12. TWC Hazardous Waste Compliance Monitoring and Enforcement Log, January 22, 1986.

13. TWC Interoffice Memorandum with Attached Investigation Report for MRI Facility, January 22, 1986.

14. Letter from Raba Kistner Consultants, Inc. (RKC) to TWC with Enclosed Closure Plan for the Impoundment, February 7, 1986.

15. TWC Interoffice Memorandum, MRI Sampling Results - Enforcement Action, February 11, 1986.

16. Letter from RKC to TWC, Ground-Water Levels at MRI Facility, April 21, 1986.

17. RKC Report of Chemical Analysis to MRI, March 11, 1986.

18. RKC Report of Chemical Analysis to MRI, March 18, 1986.

19. RKC Report of Chemical Analysis to MRI, May 22, 1986.

20. Letter from RKC to TWC, Supplemental Information on 2/7/86 Closure Plan, May 28, 1986.

21. TWC Conference Record, Closure Plan, June 11, 1986.

22. TWC Conference Record, MRI Noncompliances and Enforcement Action, June 18, 1986.

23. TWC Interoffice Memorandum, MRI Facility Added to TWC Land Disposal Universe, July 1, 1986.

24. Letter from RKC to TWC, Supplement to 2/7/86 Closure Plan, July 1, 1986.

25. Letter from J.D. Head (TWC) to M.A. Hefner (TWC), MRI Violations/Draft Order, August 7, 1986.

26. Letter from RKC to TWC, Solid Waste Classification of Impoundment Sludge, August 12, 1986.

27. Letter from TWC to RKC, Classification of Impoundment Sludge, August 15, 1986.

28. Letter from RKC to TWC, Classification of Stabilized Sludge, August 25, 1986.

29. Letter from RKC to TWC, Information on Constituents of Chemical Admixture Solution, August 29, 1986.

30. Letter from TWC to RKC, Classification of Stabilized Sludge as Class II, September 11, 1986.

31. Letter from TWC to MRI, Review of Letter of Credit, September 18, 1986.

32. TWC Notice of Registration, September 25, 1986.

33. Letter from TWC to MRI, Revisions Needed for Closure Plan, September 26, 1986.

34. Letter from MRI to TWC, Standby Trust Agreement (without Enclosure), October 9, 1986.

35. TWC Letter to MRI, Closure Plan Approval, October 13, 1986.

36. TWC Notice of Registration, November 5, 1986.

37. Ground Water Quality Assessment Plan for MRI Facility, November 7, 1986.

38. TWC Solid Waste Compliance Monitoring Inspection Report, December 10, 1986.

39. TWC Interoffice Memorandum, Sampling Event at MRI, March 27, 1987.

40. Letter from RKC to Texas Hazardous and Solid Waste Division, Proposed Revisions to Ground Water Quality Assessment Plan, August 17, 1987.

41. Letter from TWC to MRI, Revisions to Ground Water Quality Assessment Plan, Undated.

42. Letter from MRI to TWC, Closure Costs and Financial Assurance, June 17, 1987.

43. Letter from RKC to TWC, Plan for Phase I of Ground Water Quality Assessment, August 5, 1987.

44. Letter from MRI to TWC, Supplemental Information on Raw Materials Used at MRI for Ground Water Quality Assessment Plan, August 7, 1987.

45. Letter from TWC to MRI, Approval of Monitor Wells 1A and 1B Installation, August 17, 1987.

46. TWC Telephone Memo to the File, Monitor Wells 1A and 1B, September 16, 1987.

47. TWC Comprehensive Ground-Water Monitoring Evaluation, October 27, 1987.

48. Letter from TWC to MRI, Conditional Approval of Ground-Water Quality Assessment Plan, November 6, 1987.

49. Letter from TWC to MRI, Submittal of Certification of Closure, December 16, 1987.

50. TWC Solid Waste Compliance Monitoring Inspection Report, October 28, 1987.

51. Letter from RKC to TWC, Supplement #2 to 10/9/86 Closure Plan, April 10, 1987.

52. RKC Report of Chemical Analysis to MRI, January 6, 1988.

53. TWC Interoffice Memorandum to the Files, Elevated Levels of Chromium, March 23, 1988.

54. TWC Conference Record, Status of MRI Ground Water Quality Assessment, March 31, 1988.

55. Letter from RKC to TWC, Results of Phase I of the Ground Water Quality Assessment, April 26, 1988.

56. Letter from MRI to TWC, Monitoring Well Data, May 2, 1988.

57. Letter from TWC to MRI, Comments on the Ground Water Quality Assessment and Closure Standard, May 25, 1988.

58. TWC Telephone Memo to the File, Mobility of Chromium III and VI, June 10, 1988.

59. Letter from RKC to TWC, Phase II Plan for Ground Water Quality Assessment, June 28, 1988.

60. Letter from TWC to MRI, Comments on Phase II Plan for Ground Water Quality Assessment, July 18, 1988.

61. Letter from RKC to TWC, Phase II B Plan for Ground Water Quality Assessment, August 18, 1988.

62. Letter from MRI to TWC, Report of Ground-Water Monitoring Data, September 19, 1988.

RECORD OF COMMUNICATION	(Record of Item Checked Below) x Phone Call ___Discussion ___Field Trip ___Conference ___Other(Specify)	
To: TWC, Hazardous & Solid Waste Enforcement Austin, TX (512) 463-8425	From: Kurt Soutendijk FIT Chemist	Date: 10-20-89 Time: 9:40 - 9:50

SUBJECT: Monier Resources, Inc.

SUMMARY OF COMMUNICATION

The FIT called TWC in Austin to inquire about Monier Resources, Inc. SI, RR 2770, 2 miles south of Buda, Texas. The FIT spoke with Linda Smith. The site in question was identified by the EPA ID Number TXD981605835 to be the same site to which Ms. Smith was speaking of. Ms. Smith said that Monier Resources, Inc. was now called Monex Resources, Inc. Also, Ms. Smith made reference to a letter from the TWC Ground Water Unit, stating that there was no chromium in the ground water above primary drinking water standards. The letter was dated November 30, 1988, with Texas Solid Waste Registration Number 31842. Ms. Smith referred FIT to Central Records, (512) 463-8562, for a copy.

CONCLUSIONS, ACTION TAKEN OR REQUIRED

INFORMATION COPIES TO:

EPA FORM 1300-6 (7-72)
Replaces EPA HQ Form 5300-3 which may be used until Supply is Exhausted.

REFERENCE 3

TEXAS WATER COMMISSION

November 30, 1988

RECEIVED
DEC 01 1988
MRI-CORPORATE

Mr. James Merkel, Director
Contracts & Environmental Services
Monex Resources, Inc.
45 N.E. Loop 410, Suite 700
San Antonio, Texas 78216

Re: Ground Water Quality Assessment
Buda Facility, SWR No. 31842

Dear Mr. Merkel:

The technical staff of the Texas Water Commission has reviewed the data submitted by Mr. Carlton Williams of Raba-Kistner Consultants, Inc. in a letter dated November 14, 1988, and we have concluded that your Ground Water Quality Assessment is complete. Based on the data presently available to us, which indicate that no chromium remains in the ground water above primary drinking water standards in existing wells and borings on your property downgradient of your inactive surface impoundment, it appears that no further ground water monitoring is necessary.

If you have any questions, please contact Miriam Renkin at 512/463-8063.

463-8287

Sincerely,

Paul A. Lewis For
Samuel B. Pole, Chief
Hazardous and Solid Waste Enforcement Section
Hazardous and Solid Waste Division

MLR/mlr

463-8331

cc: Ms. Linda Smith, TWC H&SW Closure Unit
TWC District 8 Office
Mr. Carlton Williams, Raba-Kistner Consultants, Inc.

31842

Engineers, Geologists, Chemists, Hygienists and Scientists

Raba-Kistner Consultants, Inc.

P.O. Box 690287, San Antonio, TX 78269-0287
12821 W. Golden Lane, San Antonio, TX 78249, (512) 699-9090

Project No. SA0782-0002-001
November 14, 1988

Texas Water Commission
P.O. Box 13087
Capitol Station
1700 N. Congress Avenue
Austin, Texas 78711-3087

Attention: Mr. Samule B. Pole, Chief
Hazardous and Solid Waste Enforcement Section
Hazardous and Solid Waste Division

Re: Groundwater Quality Assessment
MONEX (Monier) Resources, Inc. Buda Facility, SWR No. 31842
Texas Water Commission Letter Dated September 12, 1988

Gentlemen:

This letter is to report to the Texas Water Commission (TWC), that the Phase IIB assessment as described in the Raba-Kistner Consultants, Inc. (R-KCI), letter dated August 18, 1988, has been completed. Submittal of this letter to the TWC has been authorized by Mr. James B. Merkel, MONEX Resources, Inc.

The Phase IIB assessment consisted of the sampling and analysis of groundwater. The groundwater sampling locations were as shown in Plate 1 of the August 18, 1988 letter. Plates 1 through 3 of this letter present the boring logs for sampling points, SP-1, SP-2, and SP-3. Plate 4 is a key to terms and symbols used on the logs. Plate 5 presents the results of the chemical analysis conducted for chromium.

The drilling was conducted by R-KCI and there was no indication during the drilling operation of any unusual conditions that may be associated with chemical contamination. The sampling points were bailed thoroughly after drilling and were allowed to recover for several days prior to sampling. As presented on the Report of Chemical Analysis form, Plate 5, chromium was not detected at a detection limit of <0.005 mg/l.

This report completes the requirements of Phase IIB under the groundwater assessment plan. We believe that the completion of the Phase IIB assessment

as described above, including the favorable analytical results for chromium, indicates that the groundwater at the predicted impact point (from the impoundment) is not contaminated with chromium. Based on the information presented herein and the fact that the impoundment has been appropriately closed, we believe that a clean site closure has been accomplished and the requirement for futher evaluation of the groundwater is not warranted. With your concurrence that further groundwater monitoring is not required, the monitoring wells and the sampling points will be removed and plugged in keeping with TWC requirements.

Very truly yours,

RABA-KISTNER CONSULTANTS, INC.

Carlton R. Williams, P.E.
Senior Consultant
Environmental Engineering

Edward G. Miller, R.E.G.
Senior Vice President
Geosciences

CRW/EGM/mll

Enclosures: Plates 1 - 7

Copy submitted: Above (1)
MONEX Resources, Inc. (1)
Attn: Mr. James B. Merkel

LOG OF BORING NO. SP-1

PHASE IIB ASSESSMENT
MONEX RESOURCES, INC. - BUDA FACILITY

Raba-Kistner Consultants, Inc.

TYPE: Air Rotary

LOCATION:

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	BLOWS PER FT	UNIT DRY WT LB/CU FT	COHESION, TON/SQ FT (0.2 0.4 0.6 0.8 1.0 1.2 1.4) / PLASTIC LIMIT — WATER CONTENT, % — LIQUID LIMIT (10 20 30 40 50 60 70)	ELEVATION, FT.
			SURF. EL:				
			CLAY with limestone fragments, dark gray and white, dry				
5			- color change from dark gray to dark brown after 3'				
			LIMESTONE CHALK, Gray and White, Weathered				
			- hard from 4.8' to 9'				
10			- soft seam, slightly moist from 9' to 9.6'				
15			- color change from white to medium gray after 16.8'				
			- soft seam, moist from 18' to 19'				
20			- hard from 19' to 20'				
25			- hard from 25.6' to 29'				
30			- hard from 32' to 39.5'				
35							
40							
45							
50							

COMPLETION DEPTH: 40'
DATE: 10-07-88

DEPTH TO WATER IN BORING: 34.53'
DATE: 10-19-88

PROJ. NO. 782-0002-001
PLATE 1

NOTE: These logs should not be used separately from the project report.

LOG OF BORING NO. SP-2

PHASE IIB ASSESSMENT
MONEX RESOURCES, INC. - BUDA FACILITY

Raba-Kistner Consultants, Inc.

TYPE: Air Rotary

LOCATION:

SURF. EL:

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	BLOWS PER FT	UNIT DRY WT LB/CU FT	COHESION, TON/SQ FT (0.2 0.4 0.6 0.8 1.0 1.2 1.4) / PLASTIC LIMIT — WATER CONTENT, % — LIQUID LIMIT (10 20 30 40 50 60 70)	ELEVATION, FT.
			CLAY with limestone fragments, dark gray and white, dry				
5			LIMESTONE CHALK, White, Medium Hard, Dry - color change to light brown from 3.2' to 8' - color change to light gray from 8' to 10' - clay seam, light bornw, moist, from 10' to 10.4' - medium gray limestone, dry from 10.4' to 13.5 - color change to white from 13.5' to 17.8' - color change to medium gray, dry from 17.8' to 19' - clayey seam, soft, moist from 19' to 22.5 - harder limestone after 22.5' - slightly moist from 22.5' to 27.5' - dry after 27.5'				
10							
15							
20							
25							
30							
35							
40							
45							
50							

COMPLETION DEPTH: 35'
DATE: 10-7-88

DEPTH TO WATER IN BORING: 33.53'

DATE: 10-19-88

PROJ. NO. 782-0002-001
PLATE 2

NOTE: These logs should not be used separately from the project report.

LOG OF BORING NO. SP-3

PHASE IIB ASSESSMENT
MONEX RESOURCES, INC. - BUDA FACILITY

Raba-Kistner Consultants, Inc.

TYPE: Air Rotary

LOCATION:

SURF. EL:

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	BLOWS PER FT	UNIT DRY WT LB/CU FT	COHESION, TON/SQ FT (0.2 0.4 0.6 0.8 1.0 1.2 1.4) / PLASTIC LIMIT — WATER CONTENT, % — LIQUID LIMIT (10 20 30 40 50 60 70)	ELEVATION, FT.
0			CLAY with limestone fragments, dark gray and white, dry - color change from dark gray to brown after 2'				
5			LIMESTONE CHALK, White, Dry - weathered from 3' to 4' - hard from 4' to 8' - clay seam, slightly moist from 8' to 8.5' - color change to light gray, hard from 9' to 14'				
10							
15			- color change to white from 14' to 15.6' - clay to marl, soft, moist from 16' to 18.5				
20			- color change to gray, medium hard, dry from 18.5' to 19.2' - color change to light brown, slightly moist, hard from 19.2' to 22.5'				
25							
30							
35							
40			- color change to medium gray, very hard from 22.5' to 39.5'				
45							
50							

COMPLETION DEPTH: 40'
DATE: 10-07-88

DEPTH TO WATER IN BORING: 34.38'
DATE: 10-19-88

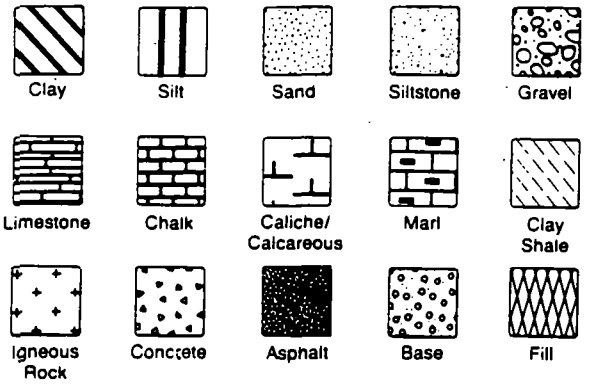
PROJ. NO. 782-0002-001
PLATE 3

NOTE: These logs should not be used separately from the project report.

SYMBOLS AND TERMS USED ON BORING LOGS

SOIL OR ROCK TYPES

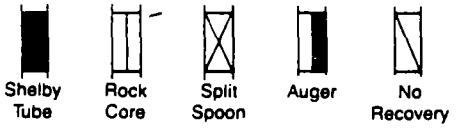
(shown in symbols column)



(Predominate Soil Types Shown Heavy)

SAMPLER TYPES

(shown in sample column)



STRENGTH TEST RESULTS

- ⊗ - Estimated Strength
- ◇ - Torvane
- ○ - Unconfined Compression

TRIAXIAL COMPRESSION

- △ - Unconsolidated-undrained
- □ - Consolidated-undrained

- c - Cohesion (Total)
- Φ - Angle of Internal Friction (Total)

- c' - Cohesion (Effective)
- Φ' - Angle of Internal Friction (Effective)

NOTE:

Values symbolized on boring logs represent shear strengths unless otherwise noted.

TERMS DESCRIBING CONSISTENCY, CONDITION OR TEXTURE

Terms used in this report to describe soils with regard to their consistency or condition are in general accordance with the discussion presented in Article 45 of SOIL MECHANICS IN ENGINEERING PRACTICE, Terzaghi and Peck, John Wiley & Sons, Inc. 1967, using the most reliable information available from the field and laboratory investigations. Terms used for describing soils according to their texture or grain size distribution are in accordance with the UNIFIED SOIL CLASSIFICATION SYSTEM, as described in Technical Memorandum No. 3-357, Waterways Experiment Station, March 1953.

TERMS CHARACTERIZING SOIL STRUCTURE

Slickensided	- having inclined planes of weakness that are slick and glossy in appearance.
Fissured	- containing shrinkage cracks, frequently filled with fine sand or silt; usually more or less vertical.
Laminated	- composed of thin layers of varying color and texture.
Interbedded	- composed of alternate layers of different soil types.
Calcareous	- containing appreciable quantities of calcium carbonate.
Well graded	- having wide range in grain sizes and substantial amounts of all intermediate particle sizes.
Poorly graded	- predominantly of one grain size, or having a range of sizes with some intermediate size missing.

TERMS DESCRIBING CONSISTENCY OR CONDITION

RELATIVE DENSITY		COHESIVE STRENGTH			PLASTICITY	
Penetration Resistance, blows per foot	Relative Density	Penetration Resistance, blows per foot	Consistency	Cohesion, TSF	Plasticity Index	Degree of Plasticity
0-4	Very Loose	0-2	Very Soft	0-0.125	0-5	None
4-10	Loose	2-4	Soft	0.125-0.25	5-10	Low
10-30	Medium Dense	4-8	Firm	0.25-0.5	10-20	Moderate
30-50	Dense	8-15	Stiff	0.5-1.0	20-40	Plastic
> 50	Very Dense	15-30	Very Stiff	1.0-2.0	> 40	Highly Plastic
		> 30	Hard	> 2.0		

NOTE: Slickensided and fissured clays may have lower unconfined compressive strengths than shown above because of planes of weakness or cracks in the soil. The consistency ratings of such soils are based on penetrometer readings.

Report of Analysis

Consulting Geotechnical, Materials and Environmental Engineers
Geologists, Scientists and Chemists

Raba-Kistner
Consultants, Inc.

P.O. Box 690287, San Antonio, TX 78269-0287
12821 W. Golden Lane, San Antonio, TX 78249
(512) 699-9090

To: MONEX Resources, Inc.
45 NE Loop 410 - Suite 700
San Antonio, Texas 78216

Project No.: SA0782-0002-007
Assignment No.: 6-12615
P.O. Number:
Date: 11-14-88

Subject: Analysis of Buda Monitor Well Samples

Test Method: EPA 600/4-79-80, Method 218.2

Test Results:

Sample	Chromium (mg/L)
6-12615-1 (SP-1; 10-19-88)	<0.005
6-12615-2 (SP-2; 10-19-88)	<0.005
6-12615-3 (SP-3; 10-19-88)	<0.005
6-12615-4 (Blank)	<0.005

< = Less than

Raba-Kistner Consultants, Inc.
by
Frank B. Schweitzer
Vice-President, Chemistry

August 7, 1986

CERTIFIED MAIL RETURN RECEIPT REQUESTED

Mr. James B. Merkel
Monier Resources, Inc.
45 N.E. Loop 410, Suite 700
San Antonio, Texas 78216

Re: Monier Resources, Inc.--Violations of Texas Solid Waste Disposal Act and Rules of the Texas Water Commission

Dear Mr. Merkel:

Enclosed, please find a copy of the "Notice of Executive Director's Preliminary Report and Petition for a Texas Water Commission Order Assessing Administrative Penalties and Requiring Certain Actions of Monier Resources, Inc.," a copy of the Executive Director's Preliminary Report, and a proposed Order for the Commission's approval.

In accordance with §8b of the Texas Solid Waste Disposal Act, Tex. Rev. Civ. Stat. Ann., Art. 4477-7, and 31 Texas Administrative Code (TAC) §337.37, the Executive Director of the Texas Water Commission is hereby notifying you that Commission consideration of the "Executive Director's Preliminary Report and Petition for a Texas Water Commission Order Assessing Administrative Penalties and Requiring Certain Actions of Monier Resources, Inc." has been scheduled for:

Wednesday, September 10, 1986, 2:00 p.m.
Room 118, Stephen F. Austin Building
1700 North Congress, Austin, Texas

Please be advised that administrative penalties have been recommended by the Executive Director, and as such Monier Resources, Inc. has the right to an evidentiary hearing on the occurrence of the violations and/or the amount of the penalty. The Texas Solid Waste Disposal Act and 31 TAC §337.38 require that a request for a hearing be made in an answer submitted not later than twenty (20) days after the date on which this notice is received.

Should you or other representatives of Monier Resources, Inc. desire to meet with me and members of the Commission staff, please contact us as soon as possible. In any event, you or your representative must provide either your consent to the recommended administrative penalty or your request for hearing before the Commission within twenty (20) days of receipt, as provided under §8b(f) of the Texas Solid Waste Disposal Act.

Please contact either Ms. Mary Reagan, Attorney or Mr. J. D. Head, Director of the Commission's Legal Division, at (512) 463-8069 with any questions or requests for consultation.

Sincerely,

Larry R. Soward

Larry R. Soward
Executive Director

Enclosures
cc: Mrs. Mary Ann Hefner, Chief Clerk, Texas Water Commission
Mr. James K. Rourke, Jr., General Counsel
Ms. Carol Batterton, Director, Field Operations Division
Mr. Bryan Dixon, Director, Hazardous and Solid Waste Division
Mr. Jack Cox, Public Interest Advocate
TWC District 8 Office

IN THE MATTER OF MONIER	§	BEFORE THE
RESOURCES, INC., SOLID WASTE	§	
REGISTRATION NO. 31842	§	TEXAS WATER COMMISSION

NOTICE OF EXECUTIVE DIRECTOR'S PRELIMINARY REPORT AND PETITION FOR A TEXAS WATER COMMISSION ORDER ASSESSING ADMINISTRATIVE PENALTIES AND REQUIRING CERTAIN ACTIONS OF MONIER RESOURCES, INC.

TO THE HONORABLE MEMBERS OF THE TEXAS WATER COMMISSION:

COMES NOW, the Executive Director of the Texas Water Commission (the "Commission"), by and through the Legal Division of the Commission, and files this petition relating to his Preliminary Report concerning violations of Article 4477-7, V.T.C.S., and the rules of the Commission. Pursuant to this Report, the Executive Director petitions the Commission to assess administrative penalties under the authority of §8b of the Texas Solid Waste Disposal Act ("Act") against Monier Resources, Inc. and to require certain actions of Monier Resources, Inc., and in support thereof would show as follows:

I.

Monier Resources, Inc. ("MRI"), located on Ranch Road 2770, two miles south of Buda, Hays County, Texas, manufactures an organic-based admixture that is used by the cement industry. MRI operated at the Buda location from December, 1980 until mid-December, 1985.

II.

Admixtures are liquid chemical solutions used in the making of concrete which are mixed with other constituents of concrete to impart certain desirable properties to concrete. The cleaning of various admixture stationary tanks and tank trucks by flushing with water results in the generation of wastewater at the Buda site.

III.

During the operating life of the plant, the wastewater was managed in a surface impoundment that is approximately 96' X 87'. The impoundment has a liner system consisting of a top liner made of one foot of compacted clay, a one-foot layer of sand, and a bottom liner of two feet of compacted clay. On February 7, 1986, MRI submitted a closure plan relating to this impoundment. A

revised closure plan was submitted on July 1, 1986, which provides for stabilization and off-site removal of all waste, waste residues, contaminated soil (excluding groundwater) and the liner system remaining associated with the impoundment. The wastewater has been removed from the impoundment after treatment, and trucked to wastewater treatment facilities operated by the City of San Antonio for final treatment and discharge.

IV.

Analyses of samples taken by the Commission on November 6, 1985, and January 10, 1986, indicate that the wastewater in the impoundment was hazardous waste due to EP toxic levels of chromium. Sludge from the bottom of the impoundment does not exhibit hazardous waste characteristics.

V.

The MRI site is situated on the Austin Chalk which is underlain by the Edwards Limestone. The deeper Edwards Limestone Aquifer is separated from the Austin Chalk by several shale formations which form an aquiclude.

VI.

In January, 1986, MRI installed a groundwater monitoring system relating to the impoundment. Data from downgradient wells show elevated levels of the following parameters: specific conductivity, total organic carbon (TOC), chloride, nitrate-N, cadmium, arsenic, chromium (value exceeding Interim Primary Drinking Water Standards), iron, lead, manganese and sodium.

VII.

In 1982, MRI had determined that wastewater managed in the impoundment was not hazardous. Sometime thereafter, probably beginning in January, 1983, MRI used potassium bichromate, a chromium bearing compound, in its formulation of admixtures. In September, 1985, in anticipation of the closure of the impoundment, MRI sampled the wastewater in the impoundment. Analysis indicated that the wastewater exhibited EP toxic levels of chromium. On November 8, 1985, MRI met with personnel from the District 8 Office of the Commission to discuss this finding.

VIII.

Violatio

MRI has caused, suffered, allowed or permitted the disposal of industrial solid waste in a manner so as to cause the discharge

Violation

of industrial solid waste into the waters in the State without specific authorization for such discharge, in violation of 31 TAC §335.4(1).

Violation

IX.

Prior to January, 1986, MRI had not installed a groundwater monitoring system relating to the hazardous waste surface impoundment, in violation of 31 TAC §§335.112(a)(5) and 335.116.

Violation

X.

Prior to February, 1986, MRI had not prepared a closure plan relating to the hazardous waste surface impoundment, in violation of 31 TAC §335.112(a)(6).

Violation

XI.

Prior to July, 1986, MRI had not obtained financial assurance for the closure of the surface impoundment, in violation of 31 TAC §335.112(a)(7).

Violations

XII.

In addition to the foregoing, other violations by MRI, for which a penalty is not recommended, are as follows:

(1) failure to obtain a permit or interim status for the storage, processing or disposal of hazardous waste (31 TAC §§336.2 and 336.43);

(2) failure to obtain an EPA identification number (31 TAC §335.63(a));

(3) failure to develop a waste analysis plan, security measures, inspection schedule, inspection log, and personnel training (31 TAC §335.112(a)(1));

(4) failure to develop a contingency plan (31 TAC §335.112(a)(3)).

XIII.

The Commission has jurisdiction to assess a civil penalty against the MRI for violations of 31 TAC §§335.4(1), 335.112(a)(5)-(7) and 335.116, pursuant to §8b of the Act.

The Commission has jurisdiction to require certain actions of MRI under 31 TAC §337.1, et seq.

XIV.

The Executive Director's Preliminary Report in the matter of MRI's violations, attached hereto as Exhibit A, concludes that violations of 31 TAC §335.4(1), 335.112(a)(5)-(7), and §335.116 have occurred and recommends that an administrative penalty of $6420 be imposed on MRI for said violations.

XV.

Pursuant to §8b of the Act, notice is hereby given to MRI of the issuance of the Executive Director's Preliminary Report.

XVI.

The factors set forth at §8b of the Act have been analyzed in the Preliminary Report and were considered by the Executive Director in recommending a civil penalty of $6420 be imposed on MRI.

XVII.

Not later than the twentieth (20th) day after the date this notice is received by MRI, MRI must either give to the Commission written consent to the Executive Director's Preliminary Report and recommended penalty, or make a written request to the Commission for a hearing. A person charged with a violation or noncompliance has the right to an evidentiary hearing on the occurrence of the violation or the amount of the penalty, or both, under 31 TAC §337.37. Not less than 20 days after the date on which this motion is mailed, the Commission shall meet to consider the Executive Director's Preliminary Report and recommendation for civil penalties, the proposed Enforcement Order, and any of the items described in 31 TAC §337.39.

XVIII.

MRI may request a conference with the Executive Director to discuss the Preliminary Report and the recommended penalty and the proposed Commission Order. A request for a conference with the Executive Director does not affect MRI's obligation to respond to the notice of the Preliminary Report within 20 days of the date of its receipt.

XIX.

The time and place of the initial hearing before the Commission on this matter are:

Wednesday, September 10, 1986, 2:00 p.m.
Room 118, Stephen F. Austin Building
1700 North Congress
Austin, Texas

XX.

In the event MRI fails to timely respond to the notice of the Executive Director's Preliminary Report, the Commission, by Order, shall either order the required actions and assess the penalty or order a hearing pursuant to §8b of the Act.

WHEREFORE, PREMISES CONSIDERED, the Executive Director prays that, upon hearing, the Commission approve the Executive Director's Preliminary Report submitted herein, and grant the relief requested.

Respectfully submitted,

TEXAS WATER COMMISSION

LARRY R. SOWARD
EXECUTIVE DIRECTOR

J. D. Head, Director
Legal Division

By Mary Reagan

Mary Reagan, Attorney
Legal Division
(512) 463-8069

EXHIBIT A

Texas Water Commission

INTEROFFICE MEMORANDUM

TO : Commissioners DATE: 8/7/86

THRU :

FROM : Larry R. Soward, Executive Director

SUBJECT: Executive Director's Preliminary Report
Monier Resources, Inc.
Solid Waste Registration No. 31842

Attached for your consideration is the Executive Director's Preliminary Report for Monier Resources, Inc., Registration No. 31842.

I. Summary of Noncompliances:
Monier Resources, Inc. has discharged industrial waste to ground water in the State. The company has not yet attempted to clean up the ground water contamination at the facility. In addition, there was a period of time during which Monier did not have an adequate ground water monitoring system, a closure plan to close the hazardous waste surface impoundment, or financial assurance for closure. All violations have been listed in the attachment entitled Executive Director's Preliminary Report to the Commission.

Summary of Penalties:
A penalty of $1,120.00 is recommended for violation of 31 TAC Section 335.4, a penalty of $3,140.00 is recommended for violation of 31 TAC Section 335.112(a)(5), a penalty of $1,080.00 is recommended for violation of 31 TAC 335.112(a)(6), and a penalty of $1080.00 is recommended for violation of 335.112(a)(7) all of which total $6420 as described in the Executive Director's Report.

Technical Recommendations:
In order to promote compliance with the Commission's Rules pertaining to management of industrial solid waste, an order containing terms and schedules binding Monier Resources, Inc. is recommended.

Larry R. Soward

Larry R. Soward
Executive Director

Enclosures

Executive Director's Preliminary Report

Facility: Monier Resources, Inc.
45 N.E. Loop 410, Suite 700
San Antonio, Texas 78216

Solid Waste Registration No.: 31842

Company Contact: Mr. James B. Merkel

I. DESCRIPTION OF TYPE OF WASTE MANAGEMENT ACTIVITY OF CONCERN:

Location

Monier Resources, Inc. is located on Ranch Road 2770, two miles south of Buda, Texas in Hays County. The facility is located adjacent to a drainage ditch which flows north to Onion Creek.

Description of Waste Management Activities

Monier Resources, Inc. manufactures an organic based admixture that is used by the cement industry. The company operated at the Buda facility from December, 1980 through mid December, 1985. Monier Resources is synonymous with Constructional Chemical Incorporated which was originally located at 9901 FM 1325 in Austin, Texas. In mid-1980 the company was relocated to the Buda site and in October of 1980 Constructional Chemicals was sold to Monier Resources, Inc. of San Antonio.

Admixtures are liquid chemical solutions used in the making of concrete. Admixtures are mixed with the other constituents of concrete (cement, sand, gravel and water) to impart certain desirable properties to concrete. During the Buda plant operations, Monier Resources, Inc. operated a surface impoundment at the site. This impoundment was used for admixture wastewater solution generated from the cleaning of the various admixture stationary tanks and tank trucks by flushing with water. Current information indicates that the wastewater in the pond is hazardous due to chromium. Representatives of Monier have stated that the hazardous waste has been traced to the clean-up of chromium containing products.

The impoundment is approximately 96 feet by 87 feet. Based on field data collected on November 19, 1985, the total volume of the impoundment contents is approximately 320,000 gallons, with a sludge volume estimated at approximately 50,000 gallons. The impoundment is constructed on a double-liner

Pond liner

concept. The top liner, next to the waste, is one foot of compacted clay. Beneath this liner there is one foot of sand, and beneath the sand there are two feet of compacted clay. There is no leachate detection or collection system incorporated into the liner system.

GW monitoring

There was no groundwater monitoring system installed during the operating life of the pond. However, installation of a groundwater monitoring system consisting of four monitor wells was initiated in January of 1986.

On February 7, 1986, Monier submitted to the Texas Water Commission (TWC) a closure plan including a description of activities and respective cost estimates to dispose of the impoundment contents and to close the impoundment.

Description of the Waste Characteristics

The wastewater in the pond was tested and found to be EP toxic due to chromium while the sludge from the bottom of the pond was found to be nonhazardous. Chromium is carcenogenic and exposure in humans has been linked to cancer, especially pulmonary cancer.

TWC samples taken on November 6, 1985, indicated that the wastewater in the impoundment was characteristically hazardous due to an EP toxicity chromium concentration of 5.920 mg/1. On December 3, 1985, TWC and the Company split a sample from the wastewater pond. The TWC sample showed an EP toxicity chromium concentration of 4.35 mg/1 (the laboratory indicated that the low value was probably due to laboratory error.) The Company's sample showed an EP toxicity chromium concentration of 7.61 mg/1. Further sampling by TWC on January 10, 1986, showed the wastewater in the pond to be hazardous due to an EP toxicity chromium concentration of 7.31 mg/1.

Surface and Underground Water Resources

The facility is located in the water shed of Onion Creek in Segment No. 1427 of the Colorado River Basin. The wastewater impoundment is located adjacent to a drainage ditch which flows north to Onion Creek.

Ground Water

The Monier Resources, Inc. facility appears to be situated on the Austin Chalk which is underlain by the Edwards Limestone. The deeper Edwards Limestone Aquifer is separated from the Austin Chalk by several shaly formations which form an aquiclude. However, in periods of high rainfall, wells that normally only produce from the Edwards can also produce from

the Austin Chalk. The most important aquifer in the area is the Edwards Limestone, however the Austin Chalk supplies a small amount of water.

Monier Resources has sampled the four existing ground water monitor wells at the facility. The data from the downgradient wells appears to show elevated levels of the following parameters: Specific Conductivity, TOC, Chloride, Nitrate-N, Cadmium, Arsenic, Chromium, Iron, Lead, Manganese, and Sodium. The chromium level exceeded the maximum level for the EPA Drinking Water Standards. The TWC sampled the wells on June 26, 1986. The data showed the chromium level in monitor well number 1 to be 0.12 mg/l which exceed the maximum level for the EPA Drinking Water Standards. In addition the TWC data showed elevated levels of Chloride, Nitrate-N, Total Dissovled Solids (TDS) and Specific Conductivity in some of the downgradient monitor wells. Monitor well number 3 showed a Chloride level of 269 mg/l which exceeds EPA's secondary maximum contaminant level for public water systems. All four of the wells exceeded the secondary maximum contaminant levels for TDS.

II SUMMARY OF NONCOMPLIANCES AND PENALTIES

	Violation	31 TAC Section	Recommended Penalty
1.	General Prohibitions	335.4(1)	$1,120
2.	No groundwater monitoring system	335.112(a)(5) [40 CFR Section 265.91]	$3,140
3.	No Closure Plan	335.112(a)(6) [40 CFR 265.112]	$1,080
4.	No Financial Assurance	335.112(a)(7) [40 CFR Part 265, Subpart H]	$1,080
		Total Recommended Penalty	$6,420

VIOLATIONS

1. General Prohibitions

Legal Requirement: 31 TAC Section 335.4 requires that no person may cause, suffer, allow, or permit the collection handling, storage, processing or disposal of industrial solid waste in such a manner so as to cause the discharge

or imminent threat of discharge of industrial solid waste into or adjacent to the waters in the state without obtaining specific authorization for such a discharge from the Texas Water Commission.

Reason for Requirement: This requirement was designed to protect the public health and waters in the State from the consequences of a person mishandling an industrial solid waste.

Company Action Constituting Violation: Groundwater data from the monitor wells at the subject surface impoundment suggests that the impoundment has leaked to the shallow ground water zone beneath the impoundment.

Company's Efforts Toward Compliance: Monier Resources submitted a closure plan for the surface impoundment at the Buda facility on February 7, 1986. The plan includes provisions for (1) removal of the standing liquids in the impoundment, (2) solidification of the sludge portion of the impoundment contents with fly ash, (3) clean-up of soil in the area of the impoundment, (4) assessment of the groundwater, (5) a post closure groundwater monitoring program, and (6) a financial assurance instrument that will be provided to insure the financial ability to affect the closure and post-closure. On April 11, 1986, the TWC approved a plan proposed by Monier Resources to immediately begin removal of the liquid contents of the impoundment. In addition, the TWC met with Raba Kistner, Monier's Consultant, on March 27, 1986 and requested additional information to complete the review of the closure plan.

2. Ground Water Monitoring

Legal Requirement: 31 TAC Section 335.112(a)(5) [40 CFR Section 265.91] requires that the owner or operator of a surface impoundment, landfill or land treatment facility install a groundwater monitoring system capable of determining the facility's impact on the quality of groundwater in the uppermost aquifer underlying the facility. This program requires installation of monitor wells, the collection and analysis of samples, evaluation of data, response to indications of contamination and proper record keeping and reporting.

Reason For The Regulation: These requirements are necessary to insure that groundwater resources are not adversely impacted by hazardous waste operations without being detected and corrected.

Company Action Constituting Violation: The company informed the TWC in November of 1985 that addition of chromium to their admixtures had resulted in the pond no longer being classified as nonhazardous. On November 22, 1986 TWC representatives recommended that more comprehensive analyses of the pond be made to determine whether the wastewater was hazardous or nonhazardous by characteristic. TWC and Monier Resources split samples on December 3, 1985, which confirmed that the wastewater in the pond was EP toxic due to chromium. On January 7, 1985, Raba Kistner began the installation of groundwater monitoring wells surrounding the wastewater pond and on February 7, 1986, submitted a closure plan for the pond.

3. Closure and Post-Closure

Legal Requirement: 31 TAC Sections 335.112(a)(6) [40 CFR Section 265.110-265.115], 335.112 [40 CFR Section 265.228] and 335.118 require the owner or operator of a hazardous waste facility to have a written closure plan that describes how and when partial closure, if applicable, and final closure will occur, an estimate of the maximum inventory of waste at any time, decontamination procedures, the expected year of closure and a schedule of final closure. This subchapter also requires the owner or operator of a hazardous waste disposal facility to have a post-closure care plan which includes groundwater monitoring activities and frequencies, planned maintenance activities and frequencies and the name, address and phone number of a contact during the post-closure care period.

Reason For The Requirement: These requirements are designed to insure that a company or facility owner does not overlook some source of potential hazardous contamination to the environment and to assist the regulatory agencies in monitoring decontamination of a facility once its operation ceases. The post-closure care requirement exists to check for any long term effects due to a disposal site.

Company Action Constituting Violation: At the time it was determined that the impoundment had been used to manage hazardous waste, the company did not have a written closure plan. Since May 19, 1981, owners and operators of hazardous waste management facilities have been required to have written closure plans.

Company's Efforts Toward Compliance: Monier Resources submitted a closure plan on February 7, 1986. This plan is presently under review by the staff.

4. Financial Assurance

Legal Requirement: 31 TAC 112(a)(7) requires that all owners or operators of hazardous waste facilities establish financial assurance for closure and owners or operators of disposal facilities establish financial assurance for post-closure care.

Owners or operators of hazardous waste facilities are also required to carry liability insurance coverage for sudden accidental occurrences and owners or operators of surface impoundments, landfills and land treatment facilities are required to show coverage for nonsudden, or gradual, accidental occurrences.

Reason For The Regulation: The regulation for closure and post-closure financial assurance is designed to insure that funds are available for proper closure and post-closure care and that environmental damage does not result from abandonment of hazardous waste facilities or other failure or inability of owners and operators to provide adequately for closure and post-closure care.

The requirements for liability coverage are designed to assure that funds are available from which people may seek compensation for bodily injury and property damage caused by accidents arising from operations of hazardous waste facilities.

Company Action Constituting Violation: Monier Resources, Inc., as a hazardous waste facility, is subject to requirements for providing financial assurance for closure and post-closure care costs and liability insurance for sudden and nonsudden accidental occurrences. Company officials have not secured the appropriate coverage.

Company's Efforts Toward Compliance: The Company has been unsuccessful in obtaining liability insurance and intends to submit a letter of credit based upon the revised closure plan.

III TWC NOTICE OF VIOLATION LETTERS AND RECORDS OF CONFERENCE

July 22, 1980 - Constructional Chemicals, Inc. notified the Agency of its plans to construct a sedimentation pond for the confinement of wash waste water at the proposed Buda facility.

October 23, 1980 - In response to Construction Chemical's July 22, 1980 letter the Agency assigned the Company a new

solid waste registration number. The letter did not constitute approval or authorization for the planned facility.

November 25, 1980 - The Company submitted the deed recordation filed in Hays County for the settlement pond.

December 29, 1980 - The operator of the facility changed to Monier Resources, Inc.

December 29, 1981 - Monier Resources, Inc. was notified of the ground water monitoring requirements for all hazardous waste facilities.

January 15, 1982 - District 8 conducted an inspection at the Monier facility. The following was ascertained during the inspection:

1. A groundwater monitoring program had not been developed.

2. Evidence to prove that the surface impoundment had a protective clay liner could not be produced.

3. A permit application to treat, store and dispose of waste on-site had not been submitted to the Agency.

4. It was observed that plant wastewater had bypassed the concrete collection sump.

5. An area where buried sludge was disposed was observed to be leaching contaminants to the railroad ditch and thence to Onion Creek.

April 16, 1982 - Representatives of District 8 and Monier met to discuss the laboratory data taken during the January 15, 1982 inspection.

April 29, 1982 - The Agency notified the Company that it had not received an annual reports concerning the disposal of solid waste for the year 1981.

October 15, 1982 - The Agency again notified the Company that it had not received an annual report for the year 1981.

December 14, 1982 - The Company responded to the District Offices letter of April 29, 1982.

May 25, 1982 - Monier's consultant, Raba Kistner, responded to the Agency concerning the classification of wastewater treated in the pond.

June 30, 1982 - Monier summarized the May 25, 1982 letter from Raba Kistner. Raba Kistner concluded that the pond was not hazardous, that a permit is not required for on-site disposal of Class I nonhazardous waste, information on pond construction will be submitted, a concrete wall will be constructed east of the collection pit, and the buried sludge will be located and a sample tested for subsequent disposal in an appropriate disposal site.

November 6, 1985 - TWC District 8 office collected a grab sample from the wastewater pond. The EP toxicity concentration of chromium in the sample was 5.920 mg/l.

November 22, 1985 - Meeting held between representatives of Monier and TWC to discuss closure requirements for the Buda facility. Monier analyses indicated greater than 5 mg/l chromium, however, an EP toxicity analyses had not been performed.

December 3, 1985 - Monier collected a nine part composite sample from the wastewater pond. The sample was split with TWC. The TWC sample showed an EP toxicity chromium concentration of 4.35 mg/l (the laboratory indicated that the low chromium concentration was probably due to laboratory error). The company had not yet received its sample analyses.

December 11, 1985 - Representatives of TWC District 8 office, Monier Resources and Raba Kistner met. The Company stated that the sample taken on December 3, 1985 indicated that the wastewater in the pond was EP toxic due to chromium (7.61 mg/l). TWC District 8 recommended that Monier install a groundwater monitoring system, obtain financial assurance and submit a closure plan.

January 7, 1986 - Raba Kistner began the installation of groundwater monitoring wells surrounding the wastewater pond.

January 10, 1986 - TWC District 8 inspected the facility and collected samples from the site. The operation of the facility had been shut down.

January 13, 1986 - The company completed the installation of the four groundwater monitoring wells.

January 22, 1986 - TWC District 8 Office submitted Monier Resources to the TWC Central Office for formal enforcement action.

February 7, 1986 - Closure plan for the wastewater pond was submitted to the Agency.

February 11, 1986 - TWC District 8 Report summarizing the January 10, 1986 sampling data. The sample results indicate the wastewater in the pond and the ground contamination northwest of the pond are hazardous due to chromium. The sump wastewater and the two drums sampled were found to be nonhazardous.

March 27, 1986 - Representatives of Raba Kistner and TWC met to discuss the closure plan submitted on February 7, 1986.

April 4, 1986 - TWC Central Office representatives performed a site inspection of the facility.

April 11, 1986 - TWC notified Monier Resources that prior to final action of the closure plan by the Executive Director Monier must publish notice of the full facility closure. In addition, the TWC recommended that Monier immediately begin removal of the liquid contents of the impoundment.

May 20, 1986 - Representatives of Raba Kistner and TWC met to discuss the closure plan submitted on February 7, 1986.

May 23, 1986 - Representative of Raba Kistner notified the TWC District 8 Office that they would begin treating the liquid in the pond with a flocculant on May 27 and 28, 1986 and begin removal on May 28, 1986.

May 29, 1986 - TWC notified Monier of the alleged noncompliances observed during the January 10, 1986 inspection. The TWC offered Monier the opportunity to arrange a facts meeting in the Austin office.

May 30, 1986 - Representative from the TWC Central Office took a three part composite sample from the pond. Representative from Monier Resources split the sample with TWC.

June 11, 1986 - Representatives of Raba Kistner, Monier Resources and the TWC met to discuss the closure plan submitted on February 7, 1986.

June 18, 1986 - Facts meeting was held between Monier Resources and TWC to discuss the closure plan and violations of Chapter 335. The Company intends to submit a revised closure plan and cost estimates based on stabilization and removal off-site of sludges in impoundment.

June 26, 1986 - Raba Kistner and TWC split samples from the sludge in the pond and the four ground water monitoring wells.

IV RECOMMENDATIONS CONCERNING ADMINSITRATIVE PENALTIES

NONCOMPLIANCES FOR WHICH NO PENALTY IS RECOMMENDED

Violation of	31 TAC Sections
1. No hazardous waste disposal permit or interim status. The company does not have a permit or interim status to store, process, or dispose of hazardous industrial solid waste.	336.2(a) and Emergency Rule 336.43
2. EPA Identification numbers. The company did not acquire an EPA identification number.	335.63(a)
3. General Facility Standards. The company has not provided the following for the facility: waste analysis plan, security plan, inspection schedule, inspection log, and training program or records.	335.112(a)(1) [40 CFR 256.10 through 265.17]
4. Contingency Plan and Emergency Procedures. The company has not developed a Contingency Plan.	335.112(a)(3) [40 CFR Section 265.51]

V TECHNICAL RECOMMENDATIONS

1. Monier Resources, Inc. submitted a closure plan on February 7, 1986. The closure plan is presently under review by the TWC. Monier shall close the hazardous waste surface impoundment within 180 days of receiving TWC approval. Closure of the surface impoundment shall be completed in accordance with 31 TAC Section 335.112(a)(6) [40 CFR Section 265.110-265-265.115], 335.112 [40 CFR Section 265.228] and 335.118.

2. Within 15 days of the date of the Order Monier Resources shall secure adequate financial assurance for closure and post-closure.

3. Within 30 days of the date of this Order, Monier shall submit a Groundwater Quality Assessment Plan for the surface impoundment of the Buda facility. This plan shall be subject to approval and modification by the Executive Director and shall at a minimum include the following:

a) The number, location, and depths of wells,

b) A sampling plan which at a minimum specifies in detail the following:

1) Well evacuation procedures including volume to be evacuated prior to sampling and handling procedures for purged well water.

2) Sample withdrawal techniques and equipment. All sampling equipment shall be constructed of inert material. If bailers are used, "teflon-coated wire, single strand stainless steel wire, or monofilament shall be used to raise and lower the bailer. Bottom valve bailers or positive gas displacement bladder pumps shall be used to withdraw samples. The sampling protocol will include field measurement of pH, conductivity, and temperature for each sample.

3) Sample handling and preservation techniques including provision for field-filtration of samples as appropriate.

4) Procedures for decontaminating sampling equipment between sampling events.

5) Procedures for measuring ground-water elevations at each sampling event.

6) Chain of custody procedures to be used for all phases of sample management.

7) Laboratory analytical techniques, quality assurance and quality control procedures and detection levels.

8) The sampling and analysis plan shall be based on the recommendations of the "Test Methods for Evaluating Solid Waste - Physical and Chemical Methods", EPA - SW-846.

The plan will be modified as necessary and approved by the Executive Director. A copy of the plan shall be kept on site and adhered to by Monier Resources for all sampling done at the facility. The plan may be modified with written approval by the Executive Director. The plan will include the reporting format for analytical results. Results will be reported as the laboratory reports the data to the

company, and detection limits and quality assurance from the laboratory will also be reported. The sampling plan was modified and approved by the Executive Director shall become part of this Order.

c) Evaluation procedures, including any use of previously gathered groundwater quality information.

d) Provisions for determination of the groundwater elevations, flow direction and gradient.

e) Provisions to determine the lateral extent of contamination associated with the impoundment.

f) A time schedule for implementation.

4. Within seven (7) calendar days of TWC approval of the assessment plan for the impoundment, Monier shall execute the plan according to the terms and schedules in the plan.

5. Within 30 days of completion of the assessment Monier shall submit a Groundwater Quality Assessment Report which shall include the following information:

a) Field data, including location of collection, analyses, and evaluation of data from which the hydraulic conductivity of the producing aquifer was determined.

b) Calculations of the vertical permeability of the aquitard separating the upper and lower aquifers, and the field test data, the analysis and evaluation of this data and a description of the test procedures in the field.

c) Lithologic logs, construction details, and description of drilling and construction procedures for the wells installed during the assessment.

d) Copies of the original laboratory analytical data shall be submitted and shall include detection limits and the detection method used for analyses.

6. Monier shall submit with the assessment report, a proposal for continued monitoring and remedial activities based on the results of the assessment.

Prepared by: Nancy J. Bolz

Inspected by: Mr. Philip Bynum, Texas Water Commission District 8 Office

Penalty Computation Worksheet

Facility: Monier Resources, Inc.

Solid Waste Registration No.: 31842

Citation of Noncompliance: 31 TAC 335.4(1)

Violation: General Prohibitions - Unauthorized Discharge to the waters of the State

Part I Recommended Penalty Based on Violation

1. Level of impact or hazard of violation - Moderate

2. Extent and gravity of violation - Minor

Penalty Range Per Event: $1,999 - $1,200

Justification: The impoundment is small and was installed with a liner system. However, data submitted by Monier Resources, Inc. for the groundwater monitoring wells monitoring the surface impoundment indicates elevated levels of chromium. Although these levels are relatively low, the impoundment overlies the Austin Chalk and Edwards Limestone.

Part II Penalty Adjustments

1. History of Noncompliance

Recommendation: No Adjustment

Justification: Monier has been aware of this violation since receipt of its first groundwater monitoring well sampling data on January 28, 1986. The Company submitted a closure plan for the impoundment on February 7, 1986.

2. Degree of Culpability

Recommendation: No Adjustment

Justification: As stated above, Monier has groundwater contamination and has submitted a closure plan for the surface impoundment.

3. Good Faith Efforts

Recommendation: Downward 10%

Justification: Monier Resources appears to have reported the discharge in a timely fashion. In addition, Monier has submitted a closure plan.

4. Economic Benefit of Noncompliance

Recommendation: No Adjustment

Justification: Some economic benefit will result if the problem is not remediated expeditiously.

5. Enhanced Penalty Needed to Deter Future Violations

Recommendation: No Adjustment

Justification: The site is being closed. The Company has been cooperative in addressing violations.

Total Penalty Adjustment: No Adjustment

Total Penalty Per Event (Part I and II):

$1,200 + (-0.10 x $799) = $1,120

Part III Recommended Total Penalty Computation

Total Number of Penalty Events - One (June 26, 1986)

Total Penalty Amount: $1,120

Penalty Computation Worksheet

Facility: Monier Resources, Inc.

Solid Waste Registration No.: 31842

Citation of Noncompliance: 31 TAC 335.112(a)(5)

Violation: Failure to provide an adequate groundwater monitoring system

Part I Recommended Penalty Based on Violation

1. Level of impact or hazard of violation - Moderate

2. Extent and gravity of violation - Major

Penalty Range Per Event: $4,399 - $3,200

Justification: Groundwater monitoring is necessary to insure that groundwater resources are not adversely impacted by hazardous waste operations without being detected and corrected.

Part II Penalty Adjustments

1. Demonstrated Good Faith

Recommendation: Downward 10%

Justification: Monier Resources determined the impoundment to be hazardous in November and began the installation of a groundwater monitoring system on January 7, 1986.

2. Degree of Culpability

Justification: In November of 1985 TWC representatives recommended the Company to install a groundwater monitoring system. The Company began installation of the system on January 7, 1986.

Recommendation: No Adjustment

3. History of Noncompliance

Recommendation: No Adjustment

Justification: The TWC is unaware of the extent of time that the pond wastewater was hazardous prior to notification. Monier installed a groundwater monitoring system within two months of notification.

4. Economic Benefit of Noncompliance

Recommendation: Upward 5%

Justification: The Company has benefitted from the noncompliance by avoiding the operating and maintenance costs associated with sampling, analysis, and reporting during the time the impoundment was hazardous and no monitoring well system was in place.

5. Enhanced Penalty Needed to Deter Future Violations

Recommendation: No Adjustment

Justification: The site is being closed. The Company has been cooperative in addressing violations.

Total Penalty Adjustment: Downward 5%

Total Penalty Per Event (Part I and Part II):

$3,200 + (-0.05 x 1,199) = $3,140

Part III Recommended Total Penalty Computation

Total Number of Penalty Events - One (December, 1985)

Total Penalty Amount: $3,140

Penalty Computation Worksheet

Facility: Monier Resources, Inc.

Solid Waste Registration No.: 31842

Citation of Noncompliance: 31 TAC 335.112 (a)(6) [40CFR 265.112]

Violation: Failure to provide a closure plan

Part I Recommended Penalty Based on Violation

1. Level of impact or hazard of violation - Minor

2. Extent and gravity of violation - Major

Penalty Range Per Event: $600 to $1199

Justification: A detailed closure plan is necessary for each facility to insure adequate protection of the environment and human health during and after closure. The closure and post-closure requirements are designed to insure that a company does not overlook some source of potential hazardous contamination to the environment and to assist the regulatory agencies in monitoring decontamination of a facility once its operation ceases. The post-closure care requirements exist to check for any long term effects due to a disposal site.

Part II Penalty Adjustments

1. Demonstrated Good Faith

Recommendation: Downward Adjustment of 10%

Justification: A closure plan for the hazardous impoundment was submitted within two months of the TWC staff directive to submit a closure plan (December 11, 1985).

2. Degree of Culpability

Recommendation: No Adjustment

Justification: Closure plan requirements have been in effect since May 19, 1981; however, according to Monier the pond was not considered hazardous until November, 1985. Monier submitted a closure plan within three months of notification to TWC District 8 office that pond contained hazardous waste.

3. History of Noncompliance

Recommendation: No Adjustment

Justification: Monier failed to make periodic hazardous waste determinations.

4. Economic Benefit of Noncompliance

Recommendation: No Adjustment

Justification: There is no great economic benefit since a closure plan has been developed.

5. Enhanced Penalty Needed to Deter Future Violations

Recommendation: No Adjustment

Justification: The site is being closed. The company has been cooperative in addressing violations.

Total Penalty Adjustment: Downward 10%

Total Penalty Per Event (Part I and Part II):

$600. + (-0.10 x $599) = $540

Part III Recommended Total Penalty Computation

Total Number of Penalty Events - Two (counting each calendar month as one event, December, 1985 and January, 1986).

Total Penalty Amount: $1,080

Penalty Computation Worksheet

Facility: Monier Resources, Inc.

Solid Waste Registration No. 31842

Citation of Noncompliance: 31 TAC 335.112(a)(7)

Violation: Failure to provide adequate financial assurance for facility closure and post-closure care.

Part I Recommended Penalty based on Violation

1. Level of impact or hazard of violation - Minor

2. Extent and gravity of violation - Major

Penalty Range Per Event: $1,199 to $600

Justification: Financial Assurance guarantees the available funds to finance proper closure of hazardous waste units in the event that the owner/operator declares bankruptcy. Lack of this assurance may place the burden of closure on the state and federal government in the event of bankruptcy of the entity.

Monier Resources has not attempted to secure adequate financial assurance for the cost of closure and post-closure.

Part II Penalty Adjustments

1. Demonstrated Good Faith

Recommendation: Downward 10%

Justification: Monier Resources has indicated that it will secure adequate financial assurance for closure and post-closure upon approval of cost estimate in the closure plan. Monier has unsuccessfully tried to obtain liability insurance.

2. Degree of Culpability

Recommendation: No Adjustment

Justification: Financial assurance requirements have been in effect since November 19, 1980; however, according to Monier, the pond was not considered hazardous until November, 1985.

3. History of Noncompliance

Recommendation: No Adjustment

Justification: Monier failed to make periodic hazardous waste determinations, therefore did not realize the liquid in the impoundment was hazardous and arrange for financial assurance.

4. Economic Benefit of Noncompliance

Recommendation: No Adjustment

Justification: Monier Resources has indicated that it will secure adequate financial assurance for closure and post-closure upon approval of cost estimate in the closure plan. Monier has unsuccessfully tried to obtain liability insurance.

5. Enhanced Penalty Needed to Deter Future Violations

Recommendation: No adjustment

Justification: The site is being closed. The company has been cooperative in adressing violations.

Total Penalty Per Event (Part I and Part II):

$600 + (-0.10 x $599) = $540

Part III Recommended Total Penalty Computation

Total Number of Penalty Events - Two (counting each calendar month as one event, December, 1985 and January, 1986).

Total Penalty Amount: $1,080

TEXAS WATER COMMISSION

AN ORDER

Determining Violations by Monier Resources, Inc. under the Texas Solid Waste Disposal Act, Texas Civil Statutes, Article 4477-7; Assessing Administrative Penalties; and Requiring Certain Actions of Monier Resources, Inc..

On this _____ day of _____, 1986, the Texas Water Commission ("the Commission") considered the petition and report of the Executive Director, alleging violations of the Texas Solid Waste Disposal Act (the "Act"), Article 4477-7, V.T.C.S., and the Commission rules pertaining to industrial solid waste management, and requesting appropriate relief, including administrative penalties. The facility made the subject of the Executive Director's petition is Monier Resources, Inc. ("MRI"), 45 N.E. Loop 410, Suite 700, San Antonio, Texas, 78216.

After proper notice to MRI, and after hearing the evidence and argument of the parties, the Texas Water Commission makes the following findings of fact and conclusions of law:

Findings of Fact

1. MRI manufactures an organic based admixture that is used by the cement industry. From December, 1980, until mid-December, 1985, MRI conducted its operations at a site located on Ranch Road 2770, two miles south of Buda, Hays County, Texas.

2. During the period of operation at the Buda location, MRI generated wastewater from the cleaning of various stationary admixture tanks and tank trucks.

3. The wastewater was managed in a surface impoundment that is approximately 96 feet by 87 feet. The impoundment has a liner system consisting of a top liner of one foot of compacted clay, a one-foot layer of sand, and a bottom liner of two feet of compacted clay.

4. On February 7, 1986, MRI submitted a closure plan relating to the impoundment. A revised plan was submitted on July 1, 1986, which provides for stabilization and off-site removal of all wastes, waste residues, contaminated soils (excluding groundwater) and the liner system associated with the impoundment.

5. The wastewater has been removed from the impoundment after treatment and trucked to wastewater treatment facilities operated by the City of San Antonio for final treatment and discharge.

6. The wastewater in the impoundment was hazardous waste due to EP toxic levels of chromium. Sludge from the bottom of the impoundment does not exhibit a characteristic of hazardous waste.

7. The MRI site is situated on the Austin Chalk which is underlain by the Edwards Limestone.

8. In January, 1986, MRI installed a groundwater monitoring system relating to the impoundment.

9. Analyses of samples from the downgradient monitoring wells indicate elevated levels of the following parameters: specific conductivity, total organic carbon (TOC), chlorides nitrate-N, cadmium, arsenic, chromium (value exceeding Interim Primary Drinking Water Standards), iron, lead, manganese and sodium.

10. In 1982, MRI had determined that wastewater managed in the impoundment was not hazardous. In September, 1985, MRI sampled wastewater in the impoundment in anticipation of closing out the impoundment. Analysis indicated that the wastewater exhibited EP toxic levels of chromium.

11. MRI has used potassium bichromate, a chromium-bearing compound, in its admixture. The initial purchase of potassium bichromate occurred in January, 1983.

12. MRI does not have a permit or interim status to store, process or dispose of hazardous waste.

13. MRI has not obtained an EPA identification number.

14. MRI has not developed the following plans or procedures relating to the surface impoundment:

    (1) waste analysis plan,

    (2) security measures,

    (3) inspection schedule,

    (4) inspection log,

    (5) personnel training, and

    (6) contingency plan.

Conclusions of Law

1. MRI is the owner and operator of a surface impoundment used to manage hazardous waste and is therefore subject to the jurisdiction of the Commission under the Solid Waste Disposal Act, Article 4477-7, V.T.C.S. and 31 TAC Chapters 335 and 336.

2. MRI has caused, suffered, allowed or permitted the disposal of industrial solid waste in a manner so as to cause the discharge of industrial solid waste into waters in the State without specific authorization from the Commission, in violation of 31 TAC §335.4(1).

3. MRI is in violation of 31 TAC §§335.112(a)(5) and 335.116 for failure to install a groundwater monitoring system relating to the impoundment prior to January, 1986.

4. MRI is in violation of 31 TAC §335.112(a)(6) for failure to have a closure plan relating to the impoundment prior to February, 1986.

5. MRI is in violation of 31 TAC §335.112(a)(7) for failure to have financial assurance for closure of the impoundment prior to July, 1986.

6. An administrative penalty of $6420 is therefore justified by facts recited herein considered in light of the factors set forth in the Solid Waste Disposal Act, §8b.

7. MRI is also in violation of the following requirements: 31 TAC §§336.2(a) and 336.43 for failure to obtain a permit or interim status prior to storage, processing or disposal of hazardous waste; 31 TAC §335.63(a) for failure to obtain an EPA identification number; 31 TAC §335.112(a)(1) for failure to comply with general facility standards (waste analysis plan, security inspection schedule, inspection log, personnel training); and 31 TAC §335.112(a)(3) for failure to develop a contingency plan.

NOW, THEREFORE, BE IT ORDERED BY THE TEXAS WATER COMMISSION that Monier Resources, Inc. shall be assessed an administrative penalty of Six Thousand Four Hundred Twenty Dollars ($6420) for violations of the Texas Solid Waste Disposal Act and the rules of the Texas Water Commission. The disposition of this administrative fine resolves only those matters raised by the Executive Director's Preliminary Report, and the Commission shall not be constrained in any manner from considering any administrative fines for violations of the Texas Solid Waste Disposal Act or the regulations or orders of the Texas Water Commission occurring after the date this Order is signed or which are not raised in the Executive Director's Preliminary Report. All checks rendered to pay penalties imposed by this order shall be made out to "The

State of Texas - General Revenue Fund." All checks will be mailed to the Director, Fiscal Services Division, Texas Water Commission, P. O. Box 13087, Capitol Station, Austin, Texas 78711-3087, with the notation, "Re: Monier Resources, Inc., Enforcement Order".

IT IS FURTHER ORDERED BY THE TEXAS WATER COMMISSION that Monier Resources, Inc. shall undertake certain actions as follows:

1. MRI shall close the hazardous waste surface impoundment within 180 days of receiving Executive Director approval of the closure plan. Closure of the surface impoundment shall be completed in accordance with 31 TAC §335.112(a)(6) (40 CFR §265.110-265.115), §335.112(40 CFR §265.228), and §335.118.

2. Within 30 days of the date of this Order, MRI shall submit a Groundwater Quality Assessment Plan for the surface impoundment. This plan shall be subject to approval and modification by the Executive Director and shall at a minimum include the following:

   A. The number, location, and depths of wells;

   B. The sampling plan which at a minimum specifies in detail the following:

      a. Well evacuation procedures including volume to be evacuated prior to sampling and handling procedures for purged well water.

      b. Sample withdrawal techniques and equipment. All sampling equipment shall be constructed of inert material. If bailers are used, "teflon-coated wire, single-strand stainless steel wire, or monofilament shall be used to raise and lower the bailer. Bottom valve bailers or positive gas displacement bladder pumps shall be used to withdraw samples. The sampling protocol will include field measurement of pH, conductivity, and temperature for each sample.

      c. Sample handling and preservation techniques including provision for field-filtration of samples as appropriate.

      d. Procedures for decontaminating sampling equipment between sampling events.

      e. Chain of custody procedures to be used for all phases of sample management.

      f. Laboratory analytical techniques, quality assurance, and quality control procedures and detection levels.

g. The sampling and analysis plan shall be based on the recommendations of the "Test Methods for Evaluating Solid Waste - Physical and Chemical Methods", EPA - SW-846.

The sampling plan shall be subject to approval and modification by the Executive Director. A copy of the plan shall be kept on site and followed by MRI for all sampling done at the facility. The plan may be modified by MRI with written approval by the Executive Director. The plan will include the reporting format for analytical results. Results will be reported as the laboratory reports the data to MRI, and detection limits and quality assurance from the laboratory will also be reported.

C. Evaluation procedures, including any use of previously gathered groundwater quality information.

D. Provisions for determination of the groundwater elevations, flow direction and gradient.

E. Provisions to determine the lateral extent of contamination associated with the impoundment.

F. A time schedule for implementation.

4. Within seven (7) calendar days of Executive Director approval of the assessment plan for the impoundment, MRI shall execute the plan according to the terms and schedules in the plan.

5. Within 30 days of completion of the assessment, MRI shall submit a Groundwater Quality Assessment Report which shall include the following information:

A. Field data, including location of collection, analyses, and evaluation of data from which the hydraulic conductivity of the producing aquifer was determined.

B. Calculations of the vertical permeability of the aquitard separating the upper and lower aquifers, and the field test data, the analysis and evaluation of this data and a description of the test procedures in the field.

C. Lithologic logs, construction details, and description of drilling and construction procedures for the wells installed during the assessment.

D. Copies of the original laboratory analytical data shall be submitted and shall include detection limits and the detection method used for analyses.

6. MRI shall submit with the assessment report, a proposal for continued monitoring and remedial activities based on the results of the assessment.

Signed this _____ day of _____, 1986.

TEXAS WATER COMMISSION

_____
Paul Hopkins, Chairman

(Seal)

_____
Ralph Roming, Commissioner

_____
Mary Ann Hefner, Chief Clerk

_____
John O. Houchins, Commissioner

CERTIFICATE OF DELIVERY

I hereby certify that on this the 7th day of August, 1986, the foregoing Notice of Executive Director's Preliminary Report and Petition for a Texas Water Commission Order Assessing Administrative Penalties and Requiring Certain Actions of Monier Resources, Inc. was hand delivered to the Chief Clerk of the Texas Water Commission in the Stephen F. Austin State Office Building, Austin, Texas.

I further certify that a true and correct copy of the foregoing Notice was mailed via Certified Mail Return Receipt Requested to Mr. James B. Merkel, Monier Resources, Inc., 45 N.E. Loop 410, Suite 700, San Antonio, Texas, 78216.

I further certify that a copy of the foregoing Notice was hand delivered to Mr. Jack Cox, Public Interest Advocate, in the Stephen F. Austin State Office Building, Austin, Texas, on this day.

Mary Reagan

Mary Reagan, Attorney
Legal Division
Texas Water Commission

RECORD OF COMMUNICATION	(Record of Item Checked Below) x Phone Call ___Discussion ___Field Trip ___Conference ___Other(Specify)	
To: TWC, Hazardous & Solid Waste Enforcement Austin, Texas (512) 463-8425	From: Kurt Soutendijk KS FIT Chemist	Date: 10-26-89 Time: 16:00-16:05

SUBJECT: Monier Resources, Inc.

SUMMARY OF COMMUNICATION

Linda Smith returned call made by FIT. Ms. Smith stated that the Monier Resources, Inc. Buda facility was approved for clean closure and that only the formalities of paper work remained to be completed.

CONCLUSIONS, ACTION TAKEN OR REQUIRED

INFORMATION COPIES
TO:

EPA FORM 1300-6 (7-72)
Replaces EPA HQ Form 5300-3 which may be used until Supply is Exhausted.

REFERENCE 6

RELATION OF WATER CHEMISTRY OF THE EDWARDS AQUIFER TO HYDROGEOLOGY AND LAND USE, SAN ANTONIO REGION, TEXAS

By Paul M. Buszka

U.S. GEOLOGICAL SURVEY

Water-Resources Investigations Report 87-4116

Austin, Texas
1987

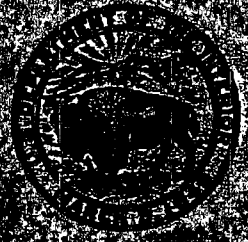
Table 1.--Summary of the lithology and water-yielding characteristics of the hydrogeologic units for each of the three depositional provinces within the study area 1/--Continued

SAN MARCOS PLATFORM IN THE BALCONES FAULT ZONE

System	Provincial series	Group	Formation	Function	Member or informal unit	Function	Thickness (feet)	Lithology	Water-yielding characteristics and hydrostratigraphy
Quaternary			Alluvium	Aq			45	Silt, sand, gravel.	Flood plain; aquifers in hydraulic connection with streams.
			Terrace deposits	Not saturated			30	Coarse gravel, sand, and silt.	High terrace bordering streams and surficial deposits on high interstream areas in Balcones fault zone.
Tertiary	Eocene	Claiborne	Reklaw	Cu			200	Sand, sandstone, and clay; lignitic, friable to indurated sandstone.	Deltaic and swamp deposits. Leaky confining unit for the Carrizo aquifer below.
			Carrizo Sand	Aq			200-800	Sandstone; medium to very coarse, friable, thick bedded, few clay beds, ferruginous.	Permeable aquifer formed by deltaic and shoreline deposits.
	Eocene and Paleocene	Wilcox and Midway		Cu		Cu	500-1,000	Clay, siltstone, and fine grained sandstone; lignitic, iron bearing.	Leaky confining bed formed by deltaic and marine shoreline.
					Wills Point	Cu	500	Clay and sand.	
Cretaceous	Gulfian	Navarro				Cu	500	Marl, clay, and sand in upper part; chalky limestone and marl in lower part.	Deeper water marine deposits. Major barrier to vertical cross-formational flow separating Cretaceous aquifer from Tertiary aquifers.
		Taylor	Pecan Gap	Cu			300-500		
			Anacacho Limestone						
		Austin	Undivided	Aq			200-350	Chalk, marl, and hard limestone. Chalk is largely a carbonate mudstone.	Minor aquifer that is locally interconnected with the Edwards aquifer by openings along some faults.
		Eagle Ford	Undivided	Cu			50	Shale, siltstone, and limestone; flaggy limestone and shale in upper part; siltstone and very fine sandstone in lower part.	Barrier to vertical cross-formational flow.
	Comanchean	Washita	Buda Limestone and Del Rio Clay	Cu			100-200	Dense, hard, nodular limestone in the upper part and clay in lower part. Thickens to the west.	Fractured limestone in the Buda is locally water yielding and supplies small quantities of water to wells. Del Rio Clay has negligible permeability.
			Georgetown Limestone (unit is within the Edwards aquifer)	Cu			20-60	Dense, argillaceous limestone; contains pyrite.	Deep water limestone with negligible porosity and little permeability.
		Edwards Group (of Rose, 1972)	Person (Edwards aquifer)	Aq	Marine	Aq	90-150	Limestone and dolomite; honeycombed limestone interbedded with chalky, porous limestone and massive, recrystallized limestone.	Reefal limestone and carbonate deposit under normal open marine conditions. Zones with substantial porosity and permeability are laterally extensive. Karstified unit.
					Leached and collapsed members	Aq	60-90	Limestone and dolomite. Recrystallized limestone occurs predominantly in freshwater zone of Edwards aquifer. Dolomite occurs in the salinewater zone.	Tidal and supratidal deposits, conforming porous beds of collapse breccias and burrowed biomicrites. Zones of honeycombed porosity are laterally extensive
					Regional dense bed	Cu	20-30	Dense, argillaceous limestone.	Deep water limestone. Negligible permeability and porosity. Laterally extensive bed that is a barrier vertical flow in the Edwards aquifer.
			Kainer (Edwards aquifer)	Aq	Grainstone	Aq	50-60	Limestone, hard, miliolid grainstone with associated beds of marly mudstone and wackestone.	Shallow water, lagoonal sediments deposited in a moderately high energy environment. A cavernous, honeycombed layer commonly occurs near the middle of the subdivision. Interparticle porosity locally is substantial.
					Dolomitic (includes Kirschberg evaporite)	Aq	150-200	Limestone, calcified dolomite, and dolomite. Leached, evaporitic rocks with breccia toward top. Dolomite occurs principally in the salinewater zone of the aquifer.	Supratidal deposits toward top. Mostly tidal to subtidal deposits below. Porous and permeable zones formed by boxwork porosity in breccias or by burrowed zones.
					Basal nodular bed	Cu	40-70	Limestone, hard, dense, clayey; nodular, mottled, stylolitic.	Subtidal deposits. Negligible porosity and permeability.

HYDROGEOLOGIC SECTIONS OF THE EDWARDS AQUIFER AND ITS CONFINING UNITS IN THE SAN ANTONIO AREA, TEXAS

U.S. GEOLOGICAL SURVEY
Water-Resources Investigations Report 85-4259



Prepared in cooperation with the
SAN ANTONIO CITY WATER BOARD and the
TEXAS DEPARTMENT OF WATER RESOURCES

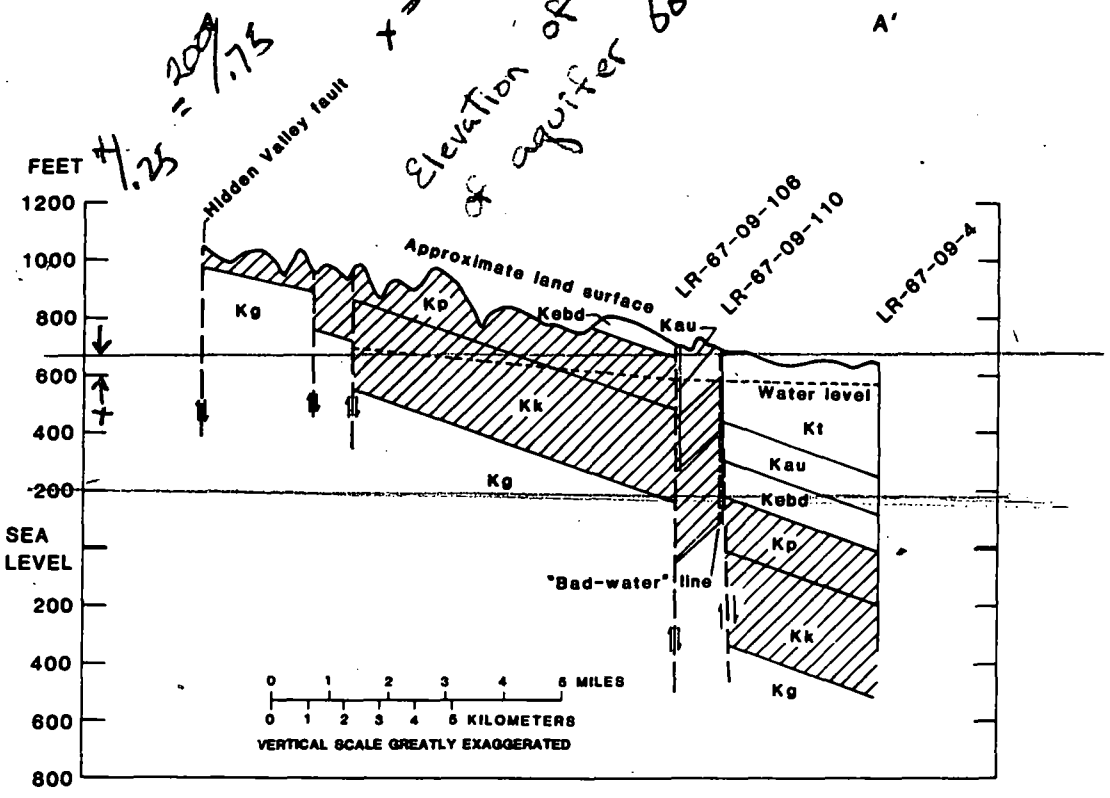


Figure 3.--Hydrogeologic section, A-A'.

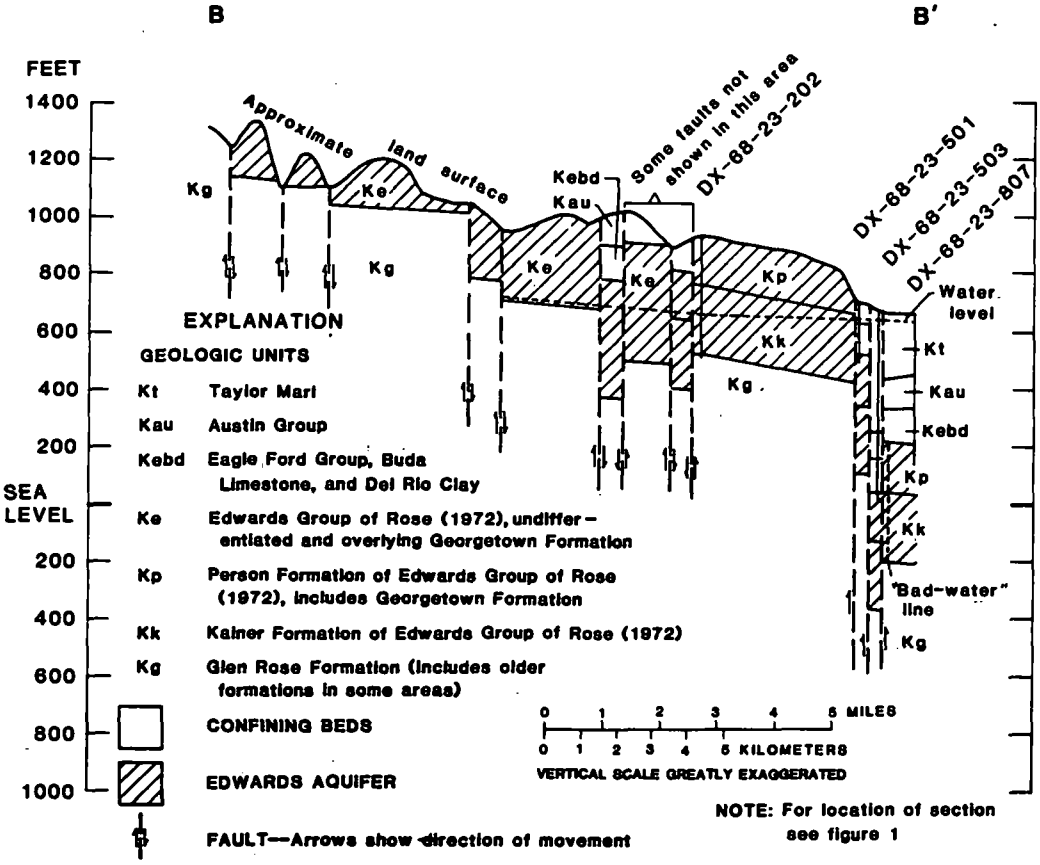


Figure 4.—Hydrogeologic section, B-B'.

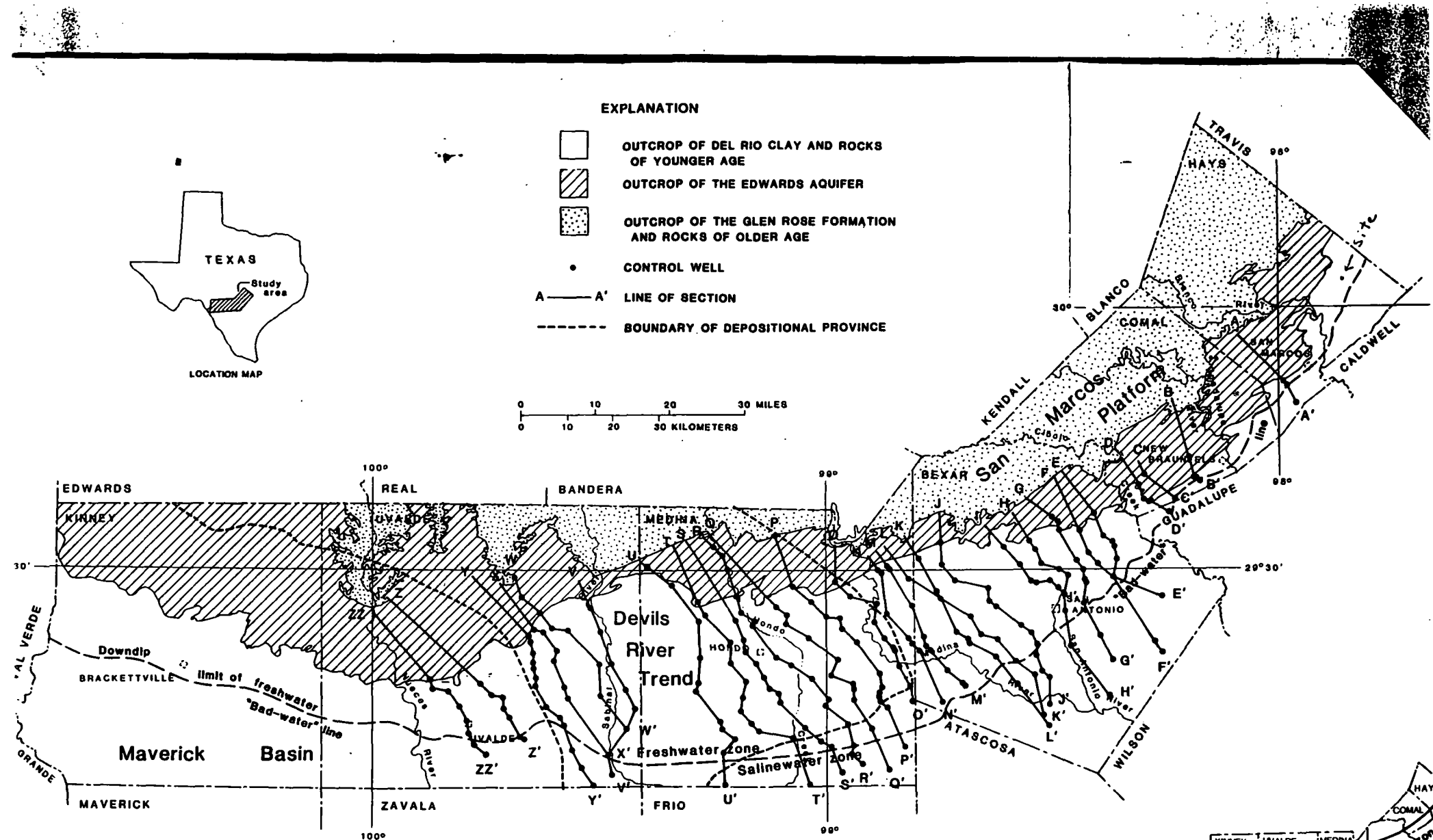


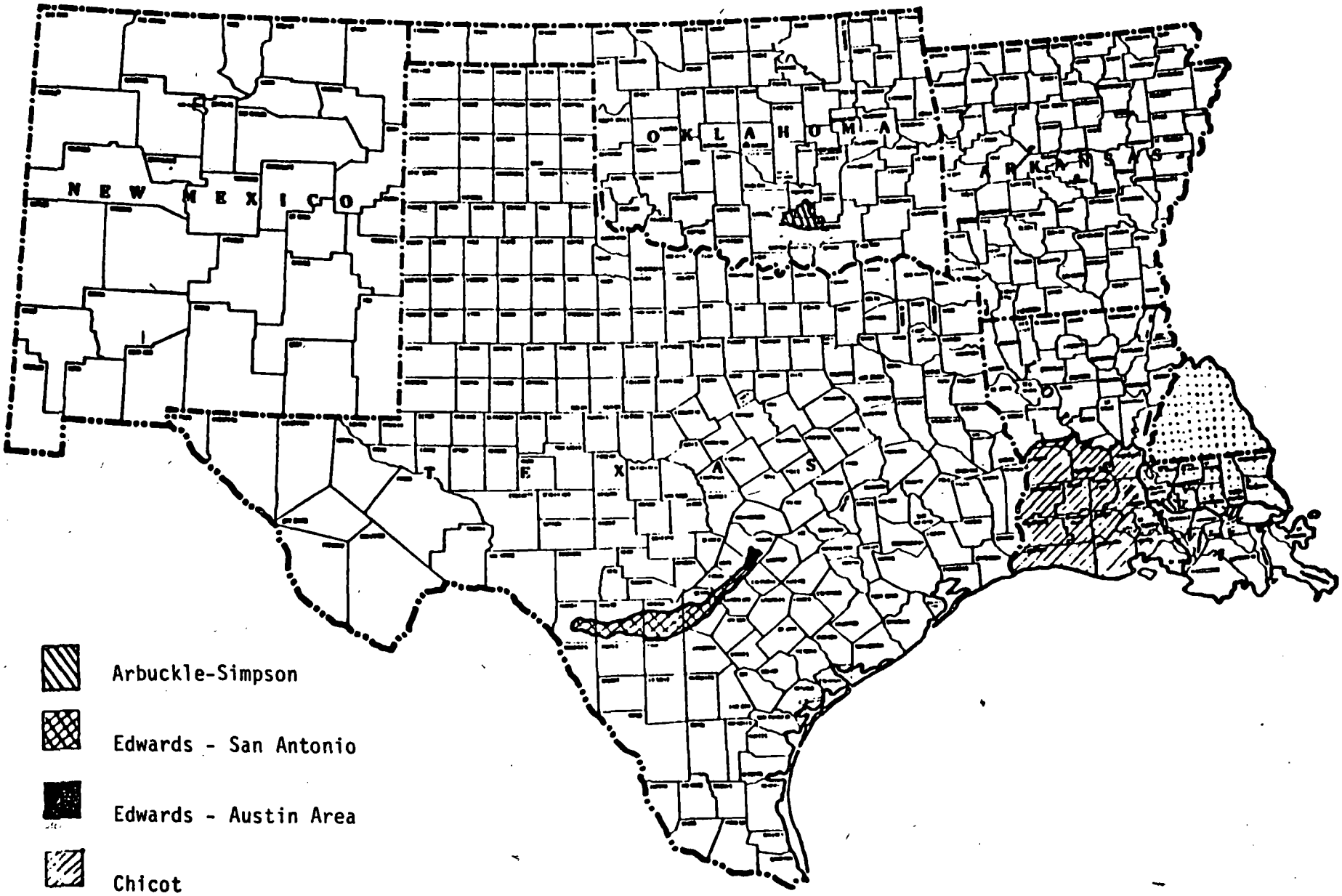
Figure 1.--Location of sections, outcrop of Edwards aquifer, downdip limit of freshwater, and the Maverick basin, Devils River trend, and San Marcos platform depositional provinces.

1989

REFERENCE: 8

EPA REGION VI

Sole Source Aquifers



REFERENCE 9

Summary Appraisals of the Nation's Ground-Water Resources—Texas-Gulf Region

By E. T. BAKER, JR., *and* J. R. WALL

GEOLOGICAL SURVEY PROFESSIONAL PAPER 813-F

A summary of the distribution, availability, and quality of ground water and its importance in the regional water supply

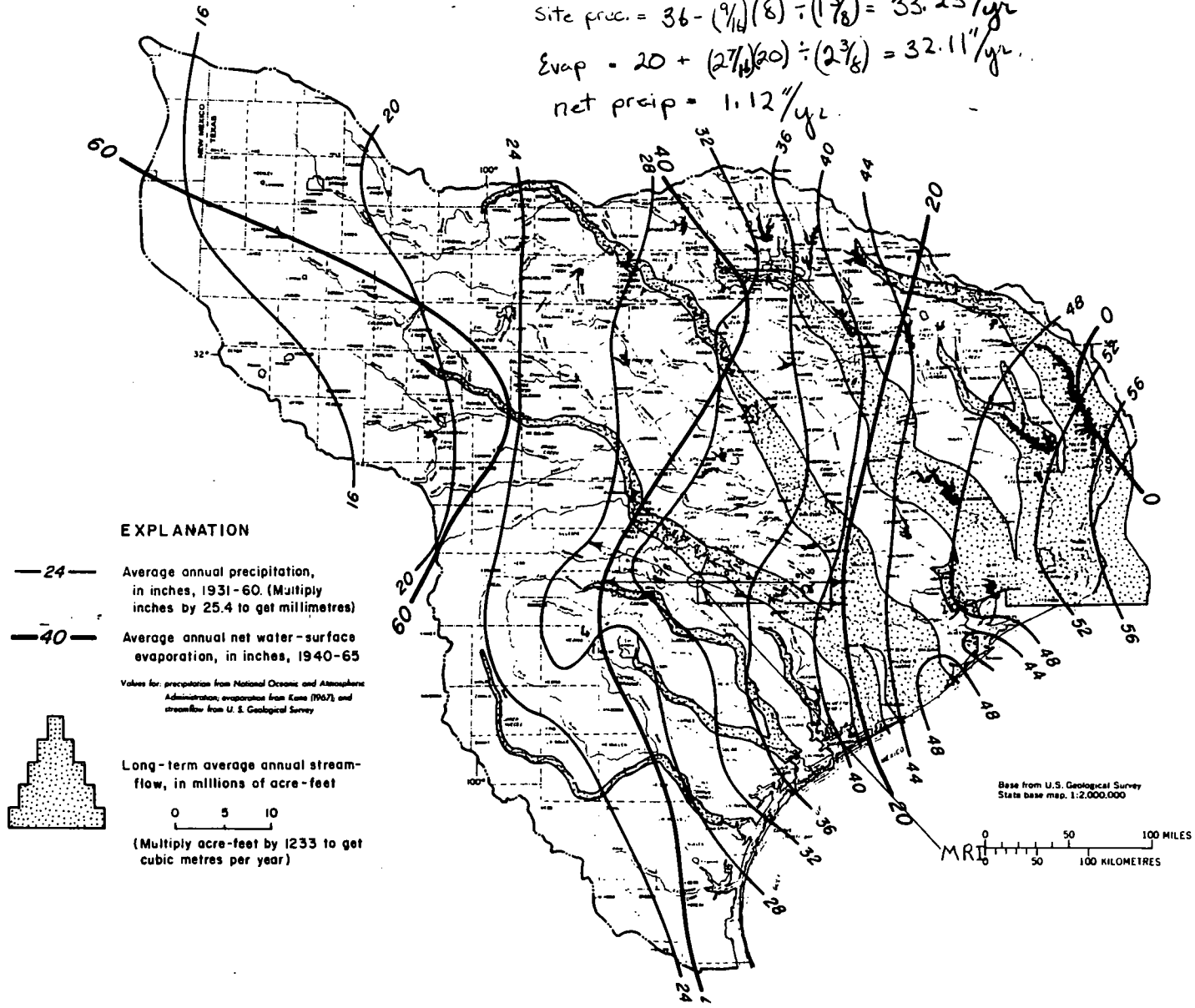
UNITED STATES GOVERNMENT PRINTING OFFICE, WASHINGTON : 1976

assuming that distance between contour lines is proportional to change in precipitation and evaporation. The values for the site are

Site prec. = $36 - (9/16)(8) \div (1\,5/8) = 33.23$"/yr

Evap = $20 + (27/16)(20) \div (2\,3/8) = 32.11$"/yr.

net precip = 1.12"/yr.



REFERENCE: 10

Engineers, Geologists, Chemists, Hygienists and Scientists

Raba-Kistner Consultants, Inc.

P.O. Box 690287, San Antonio, TX 78269-0287
12821 W. Golden Lane, San Antonio, TX 78249, (512) 699-9090

Project No. SA0782-0002-001
August 18, 1988

Texas Water Commission
P.O. Box 13087
Capitol Station
1700 N. Congress Avenue
Austin, Texas 78711-3087

Attention: Mr. Samuel B. Pole, Chief
Hazardous and Solid Waste Enforcement Section
Hazardous and Solid Waste Division

Re: Ground Water Quality Assessment
Monier Resources, Inc.
Buda Facility, SWR No. 31842
Texas Water Commission Letter Dated July 18, 1988

Gentlemen:

This letter is in reply to your referenced letter on the Monier Resources, Inc. (MRI), Ground Water Quality Assessment Plan (GWQAP). Presented below is the Phase IIB Plan which has been prepared to comply with the above referenced letter with regard to Phase IIA. Recent chemical analysis of the original groundwater sample of MW-1 showed the chromium to be in the trivalent state. Submittal of this letter to the Texas Water Commission (TWC) has been approved by Mr. J. Merkel, Environmental Manager, MRI.

The Phase IIB program will be to place groundwater sampling points (piezometers) downgradient and on either side at both the major and minor axis of the projected plume. The locations of the proposed groundwater sampling points are shown on Plate 1, Proposed Sampling Point Location Map. Water samples will be taken from these piezometers and analyzed for chromium. The proposed piezometer locations and installation, sampling, and analysis protocols are presented in the paragraphs below.

The piezometers are to be located downgradient and on either side of both the major and minor axis of the projected plume. The origin of the plume would be the location of the closed impoundment. The major axis of the plume will be in the same direction as the flow of groundwater within the local water table aquifer. Historical groundwater elevation data from the groundwater monitoring wells on the site have shown the hydrologic downgradient direction to be northeastward roughly parallel to the Missouri Pacific Railroad tracks. As expected for a water table aquifer, this corresponds to the local downgradient direction for surface topography as shown on Plate 2 of the November 7, 1986 GWQAP. According

to the July 18, 1988 TWC letter, the Phase IIB groundwater investigation shall emphasize the scenario where the projected plume of contamination has migrated downgradient 150-ft to 200-ft from the location of the former impoundment. Contamination from chromium was found principally in the now disestablished monitor well MW-1. As shown on Plate 1, three piezometers, SP-1, SP-2, and SP-3, are proposed downgradient from the location of the closed impoundment. SP-1 and SP-3 are located 150-ft and 200-ft, respectively, from the location of the closed impoundment and downgradient from the location of MW-1. SP-2 is located 175-ft downgradient from the closed impoundment and along the estimated principal axis of the projected plume. These piezometers are located so that ground water samples may be obtained in the expected location of the projected plume.

The piezometers will be installed using hollow stem augers. Each will consist of slotted 2-inch PVC pipe screened over an appropriate interval to obtain a sample representative of the groundwater present at that location. From these piezometers, groundwater samples will be collected and analyzed for total chromium.

The results of the piezometer installation and the chemical analysis of the water samples will be presented in a written report. This report will be presented to the TWC for review of the need for further actions.

Very truly yours,

RABA-KISTNER CONSULTANTS, INC.

Carlton R. Williams, P.E.
Senior Consultant
Environmental Engineering

for Edward G. Miller, R.E.G.
Senior Vice President
Geosciences

CRW/EGM/mll

Enclosure: Plate 1

Copy submitted: Above (1)
Monier Resources, Inc. (1)
Attn: Mr. James Merkel

United States Department of Agriculture

Soil Conservation Service

In Cooperation with Texas Agricultural Experiment Station

Soil Survey of Comal and Hays Counties Texas

SOIL LEGEND

The first letter, always a capital, is the initial letter of the soil name. The second letter is a capital if the mapping unit is broadly defined 1/; otherwise, it is a small letter. The third letter, if used, is always a capital and shows the slope. Symbols without slope letters are those of nearly level soils or miscellaneous areas. A final number, such as 3 in the symbol, shows that the soil is eroded.

SYMBOL	NAME
AgC3	Altoga silty clay, 2 to 5 percent slopes, eroded
AgD3	Altoga silty clay, 5 to 8 percent slopes, eroded
AnA	Anhalt clay, 0 to 1 percent slopes
AnB	Anhalt clay, 1 to 3 percent slopes
AuB	Austin-Canyon complex, 1 to 3 percent slopes
AuC3	Austin-Canyon complex, 2 to 5 percent slopes, eroded
BoB	Boerne fine sandy loam, 1 to 3 percent slopes
BrB	Bolar clay loam, 1 to 3 percent slopes
BtD	Brackett-Rock outcrop-Comfort complex, undulating
BtG	Brackett-Rock outcrop-Real complex, steep
ByA	Branyon clay, 0 to 1 percent slopes
ByB	Branyon clay, 1 to 3 percent slopes
CaC3	Canyon clay loam, 3 to 5 percent slopes, eroded
CrD	Comfort-Rock outcrop complex, undulating
DaB	Denton silty clay, 1 to 3 percent slopes
DaC3	Denton silty clay, 1 to 5 percent slopes, eroded
DoC	Doss silty clay, 1 to 5 percent slopes
ErG	Eckrant-Rock outcrop complex, steep
FeF4	Ferris clay, 5 to 20 percent slopes, severely eroded
GrC	Gruene clay, 1 to 5 percent slopes
HaB	Heiden clay, 1 to 3 percent slopes
HaC3	Heiden clay, 3 to 5 percent slopes, eroded
HaD3	Heiden clay, 5 to 8 percent slopes, eroded
HgD	Heiden gravelly clay, 3 to 8 percent slopes
HoB	Houston Black clay, 1 to 3 percent slopes
HvB	Houston Black gravelly clay, 1 to 3 percent slopes
HvD	Houston Black gravelly clay, 3 to 8 percent slopes
KrA	Krum clay, 0 to 1 percent slopes
KrB	Krum clay, 1 to 3 percent slopes
KrC	Krum clay, 3 to 5 percent slopes
LaA	Lewisville silty clay, 0 to 1 percent slopes
LaB	Lewisville silty clay, 1 to 3 percent slopes
MEC	Medlin-Eckrant association, undulating 1/
MED	Medlin-Eckrant association, hilly 1/
Oa	Oakalla silty clay loam, rarely flooded
Ok	Oakalla soils, frequently flooded
Or	Orif soils, frequently flooded
PdB	Pedernales fine sandy loam, 1 to 5 percent slopes
Pt	Pits
PuC	Purves clay, 1 to 5 percent slopes
RaD	Real gravelly loam, 1 to 8 percent slopes
RcD	Real-Comfort-Doss complex, undulating
RUD	Rumple-Comfort association, undulating 1/
SeB	Seawillow clay loam, 1 to 3 percent slopes
SeD	Seawillow clay loam, 3 to 8 percent slopes
SuA	Sunev silty clay loam, 0 to 1 percent slopes
SuB	Sunev clay loam, 1 to 3 percent slopes
TaB	Tarpley clay, 1 to 3 percent slopes
Tn	Tinn clay, frequently flooded

1/ The composition of these soils is more variable than that of others in the survey area, but has been controlled well enough to be interpreted for the expected use of the soils.

CONVENTIONAL AND SPECIAL SYMBOLS LEGEND

CULTURAL FEATURES

BOUNDARIES

- National, state or province
- County or parish
- Minor civil division
- Reservation (national forest or park, state forest or park, and large airport)
- Land grant
- Limit of soil survey (label)
- Field sheet matchline & neatline
- AD HOC BOUNDARY (label)
- Small airport, airfield, park, oilfield, cemetery, or flood pool

STATE COORDINATE TICK

LAND DIVISION CORNERS (sections and land grants)

ROADS

- Divided (median shown if scale permits)
- Other roads
- Trail

ROAD EMBLEM & DESIGNATIONS

- Interstate
- Federal
- State
- County, farm or ranch

RAILROAD

POWER TRANSMISSION LINE (normally not shown)

PIPE LINE (normally not shown)

FENCE (normally not shown)

LEVEES

- Without road
- With road
- With railroad

DAMS

- Large (to scale)
- Medium or small

PITS

- Gravel pit
- Mine or quarry

MISCELLANEOUS CULTURAL FEATURES

- Farmstead, house (omit in urban areas)
- Church
- School
- Indian mound (label)
- Located object (label)
- Tank (label)
- Wells, oil or gas
- Windmill
- Kitchen midden

WATER FEATURES

DRAINAGE

- Perennial, double line
- Perennial, single line
- Intermittent
- Drainage end
- Canals or ditches
- Double-line (label)
- Drainage and/or irrigation

LAKES, PONDS AND RESERVOIRS

- Perennial
- Intermittent

MISCELLANEOUS WATER FEATURES

- Marsh or swamp
- Spring
- Well, artesian
- Well, irrigation
- Wet spot

SPECIAL SYMBOLS FOR SOIL SURVEY

SOIL DELINEATIONS AND SYMBOLS

ESCARPMENTS

- Bedrock (points down slope)
- Other than bedrock (points down slope)

SHORT STEEP SLOPE

GULLY

DEPRESSION OR SINK

SOIL SAMPLE SITE (normally not shown)

MISCELLANEOUS

- Blowout
- Clay spot
- Gravelly spot
- Gumbo, slick or scabby spot (sodic)
- Dumps and other similar non soil areas
- Prominent hill or peak
- Rock outcrop (includes sandstone and shale)
- Saline spot
- Sandy spot
- Severely eroded spot
- Slide or slip (tips point upslope)
- Stony spot, very stony spot

RECORD OF COMMUNICATION	(Record of Item Checked Below) x Phone Call ___Discussion ___Field Trip ___Conference ___Other(Specify)	
To: *Bob Spain (512) 389-4725	From: Kurt Soutendijk FOR FIT Chemist	Date: 11-30-89 Time: 3:30 - 3:40 pm

SUBJECT: Monier Resources, Inc.

SUMMARY OF COMMUNICATION

The FIT phoned Bob Spain of the Texas Parks and Wildlife Department. Mr. Spain lives only a few miles south of MRI. Mr. Spain said the area surrounding MRI is void of any sensitive environment and that only hawks and small rodents dwelled there. Mr. Spain said there are no parks or wetlands in this area.

*Bob Spain is in the Environmental Assessment Branch of the Resource Protection Division of the Texas Parks and Wildlife Department

CONCLUSIONS, ACTION TAKEN OR REQUIRED

INFORMATION COPIES TO:

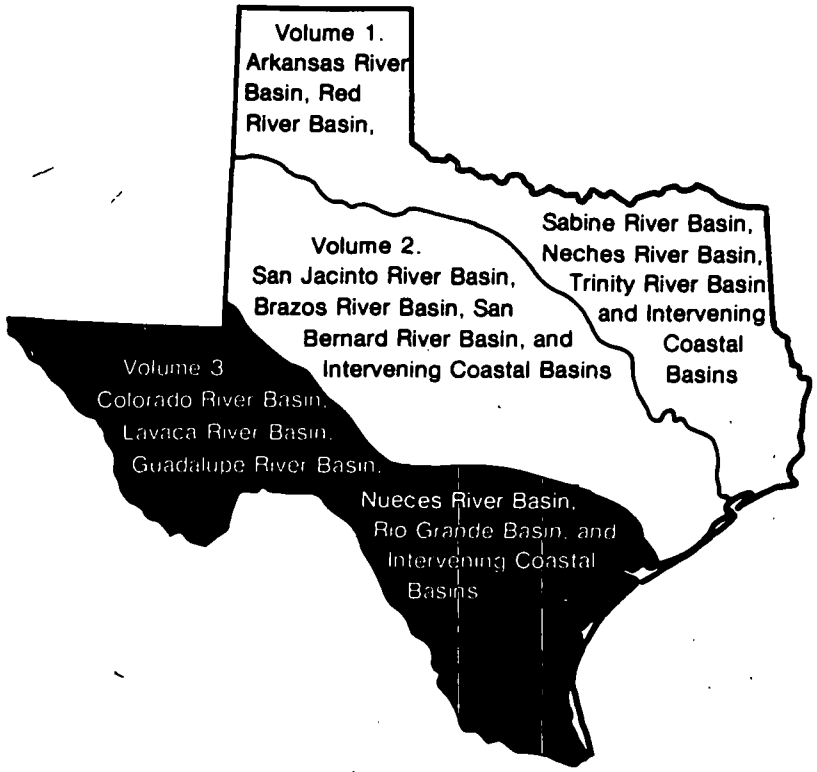
EPA FORM 1300-6 (7-72)
Replaces EPA HQ Form 5300-3 which may be used until Supply is Exhausted.

REFERENCE: 13

Water Resources Data Texas Water Year 1988

Volume 3. Colorado River Basin, Lavaca River Basin, Guadalupe River Basin, Nueces River Basin, Rio Grande Basin, and Intervening Coastal Basin

by H.D. Buckner, E.R. Carrillo, H.J. Davidson and W.J. Shelby



U.S. GEOLOGICAL SURVEY WATER-DATA REPORT TX-88-3
Prepared in cooperation with the State of Texas
and with other agencies

08159000 ONION CREEK AT U.S. HIGHWAY 183 NEAR AUSTIN, TX

LOCATION.--Lat 30°10'40", long 97°41'18", Travis County, Hydrologic Unit 12090205, on right bank at downstream side of downstream bridge on U.S. Highway 183, 2.4 mi downstream from Williamson Creek, 3.2 mi southwest of Del Valle, and 7.5 mi southeast of the State Capitol Building in Austin.

DRAINAGE AREA.--321 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--May 1924 to March 1930, March 1976 to current year. In 1924-30 station was published as "near Del Valle."

GAGE.--Water-stage recorder. Datum of gage is 442.85 ft State Department of Highways and Public Transportation datum. May 15, 1924, to Mar. 15, 1930, nonrecording gage at highway bridge 1,700 ft upstream at 6.42-foot higher datum.

REMARKS.--No estimated daily discharges. Records good. Flow is slightly regulated by several small ponds on main channel and tributaries above station. Three recording rain gages in the watershed.

AVERAGE DISCHARGE.--17 years (water years 1925-29, 1977-88), 84.1 ft³/s (3.56 in/yr), 60,930 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 76,000 ft³/s May 28, 1929 (gage height, 30.5 ft), present datum; no flow at times.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since 1869 occurred about July 3, 1869, stage about 38 ft from newspaper accounts, and Sept. 9, 1921, stage 38.0 ft, from floodmark, present site and datum.

EXTREMES FOR CURRENT YEAR.--Peak discharge greater than base discharge of 2,500 ft³/s and maximum (*):

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Nov. 25	1200	*3,580	*12.54	No other peak greater than base discharge.			

Minimum discharge, no flow at times.

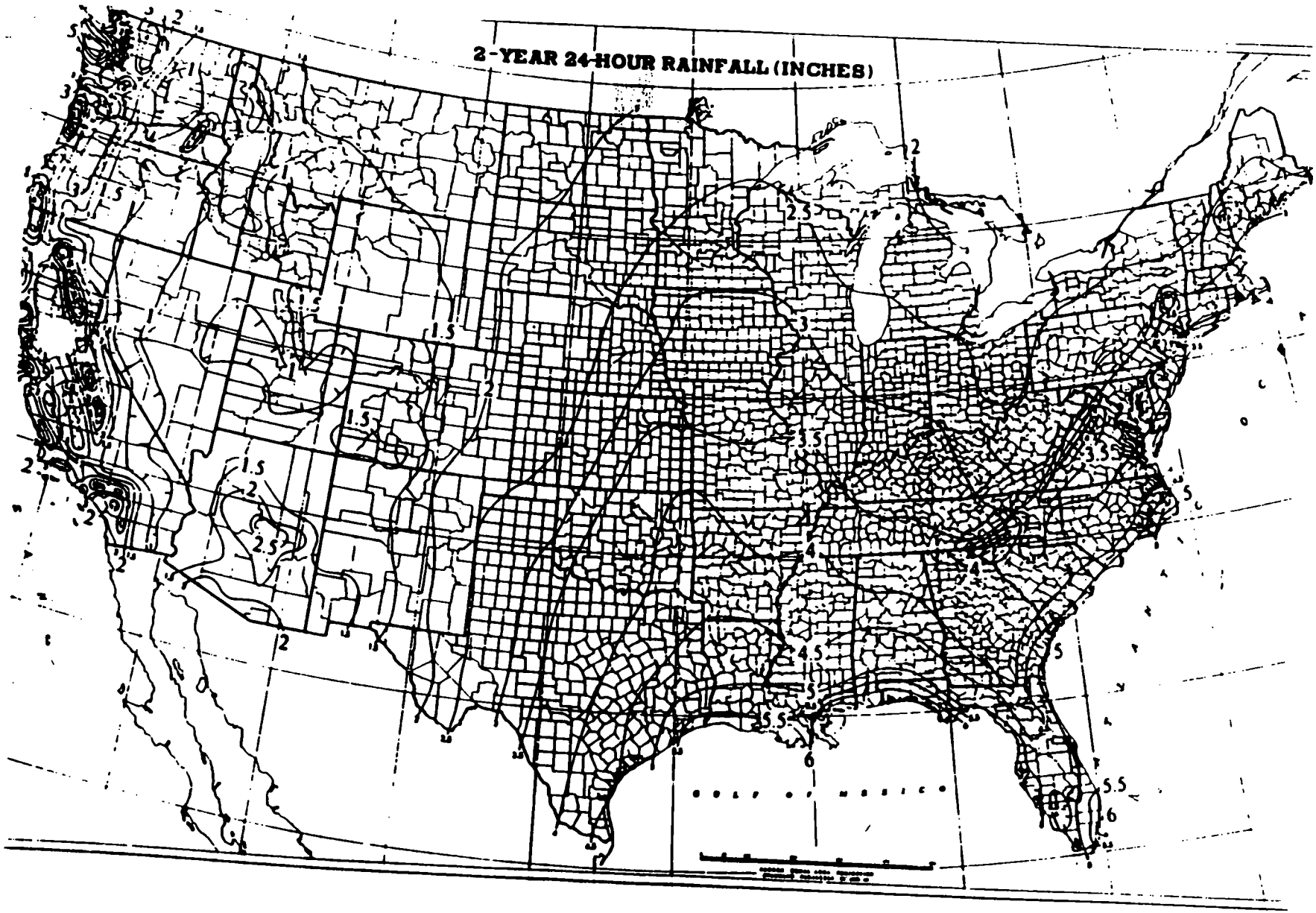
DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.1	2.6	8.4	6.7	7.3	3.5	3.5	3.8	4.8	.00	5.9	.00
2	2.7	2.3	7.1	6.2	7.2	13	3.5	2.3	4.6	.00	1.9	.00
3	2.4	2.3	6.3	7.1	6.8	6.7	3.2	1.4	73	.00	.26	.00
4	1.7	2.5	6.0	7.2	6.3	2.9	3.1	1.1	33	.00	.10	.00
5	1.6	2.6	6.6	6.7	6.3	2.3	2.9	1.1	10	24	.00	.00
6	1.3	2.6	6.1	7.2	5.9	2.0	2.8	.75	11	20	.00	.00
7	1.3	2.6	5.8	11	5.8	1.8	2.7	.57	11	16	.00	.00
8	1.3	25	5.6	7.8	5.2	1.7	2.6	.55	11	9.7	.00	.00
9	.87	23	6.2	6.9	4.9	1.6	5.3	.41	9.4	5.4	.00	.00
10	.62	8.1	5.8	6.6	5.0	1.5	9.2	.31	6.6	2.0	.00	.00
11	.76	4.8	5.8	6.8	3.9	1.2	4.5	35	5.8	.70	16	.00
12	1.1	4.1	5.4	6.7	4.0	1.2	3.2	38	5.6	152	170	.00
13	1.8	3.6	5.7	6.0	4.7	1.3	2.7	5.3	5.2	23	11	.00
14	1.9	3.5	5.3	5.8	4.7	1.4	2.6	2.4	6.0	10	5.0	.00
15	1.4	4.9	4.9	5.8	4.3	1.0	3.6	1.4	4.3	6.6	1.3	.00
16	1.0	23	4.9	5.8	4.1	.79	2.1	1.0	.04	4.6	.27	.00
17	.57	14	4.9	5.5	4.1	105	2.4	.98	.00	2.6	15	.00
18	.57	7.2	6.1	5.4	6.6	50	2.8	1.0	.00	1.1	3.6	.00
19	.76	5.1	65	5.4	7.7	12	2.2	1.2	.00	.53	.26	.00
20	.77	4.1	38	5.4	4.9	7.5	1.9	1.5	.00	9.9	.00	.00
21	1.1	4.5	16	5.4	4.5	5.5	1.7	154	.00	26	.00	.00
22	1.2	4.1	11	5.4	4.5	4.6	1.6	9.1	.00	7.3	.00	.00
23	2.3	4.1	8.9	5.6	4.5	4.4	1.6	4.0	.00	3.3	.00	.00
24	3.6	4.2	8.3	5.9	3.7	4.2	1.4	3.4	.00	.76	.00	.00
25	3.7	769	8.3	5.7	3.3	4.1	1.3	2.2	.00	.07	.00	.00
26	3.8	116	8.4	5.4	3.2	3.7	1.0	1.8	2.0	.00	.00	.00
27	3.1	71	7.5	5.6	3.4	3.7	.79	1.4	18	.00	.00	.00
28	2.6	23	7.0	5.8	3.0	3.6	.61	1.1	.67	.00	.00	.00
29	2.4	13	6.6	6.0	3.7	3.7	1.0	.93	.00	.00	.00	.00
30	2.3	10	6.3	6.5	---	3.3	3.5	1.5	.02	6.1	.00	.00
31	2.7	---	6.7	7.1	---	3.3	---	3.7	---	9.9	.00	---
TOTAL	56.32	1166.8	304.9	196.4	143.5	262.49	81.30	283.20	222.03	341.56	230.59	0.00
MEAN	1.82	38.9	9.84	6.34	4.95	8.47	2.71	9.14	7.40	11.0	7.44	.00
MAX	3.8	769	65	11	7.7	105	9.2	154	73	152	170	.00
MIN	.57	2.3	4.9	5.4	3.0	.79	.61	.31	.00	.00	.00	.00
AC-FT	112	2310	605	390	285	521	161	562	440	677	457	.0
CFSM	.01	.12	.03	.02	.02	.03	.01	.03	.02	.03	.02	.00
IN.	.01	.14	.04	.02	.02	.03	.01	.03	.03	.04	.03	.00

CAL YR 1987 TOTAL 63317.72 MEAN 173 MAX 6670 MIN .57 AC-FT 125600 CFSM .54 IN. 7.34
WTR YR 1988 TOTAL 3289.09 MEAN 8.99 MAX 769 MIN .00 AC-FT 6520 CFSM .03 IN. .38

REFERENCE: 14

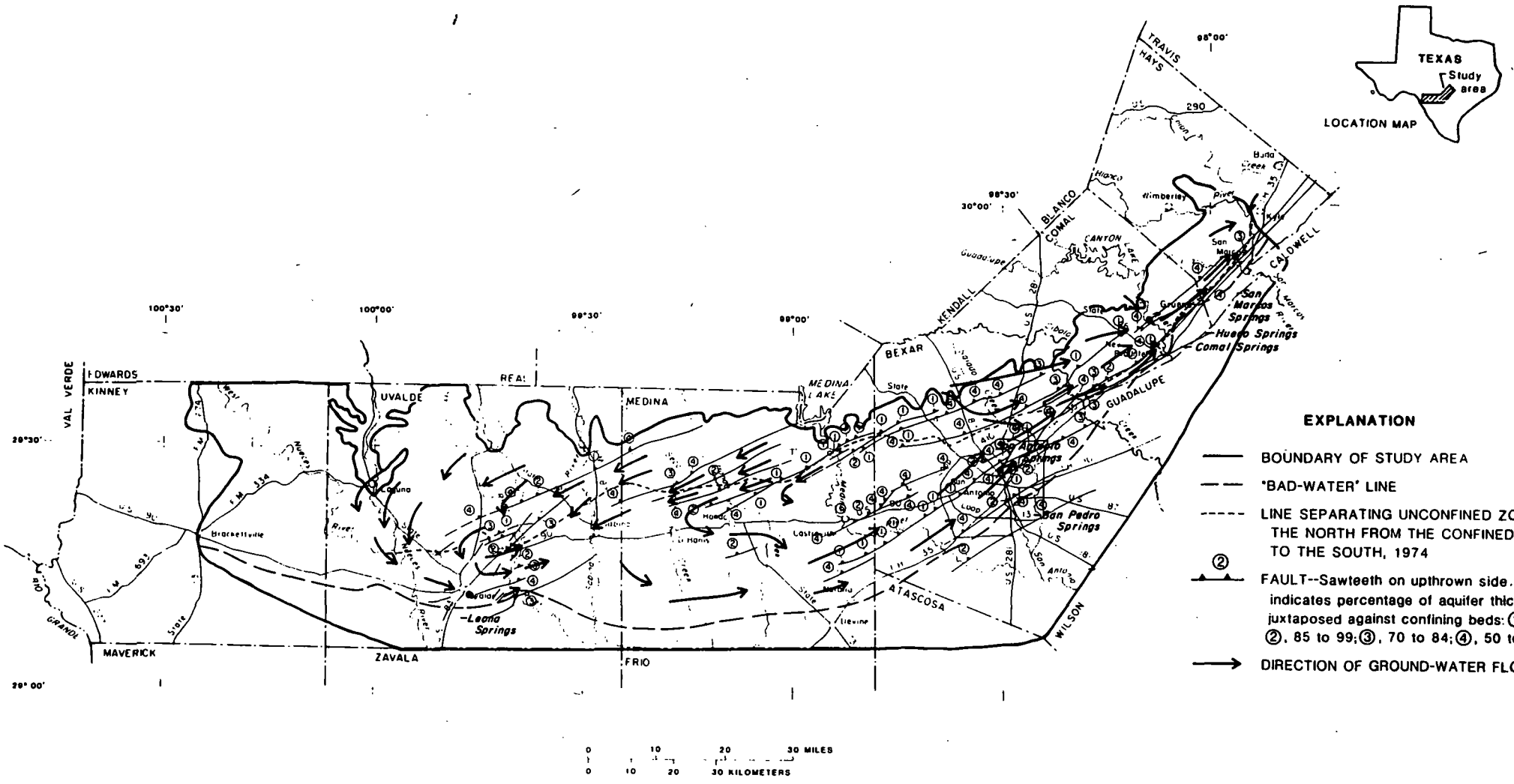
Herschfield, D.M., 1961, Rainfall Frequency Atlas of the United States. U.S. Weather Bureau Technical Paper No. 40.


2-YEAR 24-HOUR RAINFALL (INCHES)

RELATION OF WATER CHEMISTRY OF THE EDWARDS AQUIFER TO HYDROGEOLOGY AND LAND USE, SAN ANTONIO REGION, TEXAS

U.S. GEOLOGICAL SURVEY

Water-Resources Investigations Report 87-4116



Modified from Maclay and others (1985) and Maclay and Small (1984)

Figure 6.--Major regional directions of ground-water flow.

DEPARTMENT OF THE INTERIOR

DONALD PAUL HODEL, Secretary

U.S. GEOLOGICAL SURVEY

Dallas L. Peck, Director

For additional information write to:

District Chief
U.S. Geological Survey
649 Federal Building
300 E. Eighth Street
Austin, TX 78701

Copies of this report can be purchased from:

U.S. Geological Survey
Books and Open-File Reports
Federal Center, Bldg. 810
Box 25425
Denver, CO 80225

heterogeneity is illustrated by the hydraulic separation between an upper and lower zone in some places by the McKnight Formation (Lozo and Smith, 1964) in the Maverick basin and by the regional dense member on the San Marcos platform (table 1; and Maclay and Small, 1984). Fault displacements within the aquifer (fig. 6), which juxtapose rocks of substantially different permeability, create preferential avenues of permeability and ground-water flow which generally parallel the direction of the fault or discontinuous heterogeneity. Subareal exposure and erosion of the carbonate rocks of the aquifer during the Cretaceous period produced trending heterogeneity in the form of karstic cavernous porosity. The karstic features where the Edwards Group crops out in the unconfined zone typically are the locally dominant permeability. Leaching of evaporite beds within the Edwards Group produced porous collapse breccia.

The lithologic and mineralogic composition of the Edwards aquifer affects the hydraulic characteristics of the rock matrix and the chemistry of water contained therein. The calcitic limestone in the freshwater part of the aquifer is several orders of magnitude more conductive to ground-water flow than the dolomite of the salinewater part. Vertical differences in lithology and mineralogy as documented by Maclay and Small (1984) and R.G. Deike (U.S. Geological Survey, written commun., 1985) also appear to relate to variation in hydraulic conductivity and ground-water chemistry.

Maclay and Small (1984) have estimated the storage coefficient of the confined aquifer to range from 1×10^{-5} to 1×10^{-4}. Estimates of drainable porosity of the limestone ranged from 6 to 14 percent from visual inspection and from 1.7 to 2.5 percent from neutron geophysical procedures. Estimates of regional specific yield, based on the annual water balance and changes of water levels in the aquifer, range from 1 to 4 percent. The latter range is considered to be the most representative of regional conditions.

Ground-Water Flow

The regional directions of ground-water flow within the Edwards aquifer extend from recharge areas in the unconfined zone to the confined zone and from west to east in the confined zone (fig. 6, and Maclay and others, 1985). However, this general pattern is modified by the occurrence of barrier faults within the system. For example, substantial ground-water flow within the aquifer in northeastern Medina County is diverted to the southwest by a system of southwest-trending barrier faults (Holt, 1959; Maclay and Small, 1984). Dye-tracing of ground-water-flow patterns and water levels from observation wells have supported the controlling effect of barrier faults on the direction of ground-water flow near Medina Lake (Holt, 1959; Maclay and Small, 1984). Concentrations of tritium, an environmental tracer, also support the concept of southwestward ground-water flow across this region (Pearson and others, 1975). In the confined zone of the Edwards aquifer in Bexar County, ground water generally flows in a northeast direction as the freshwater part of the aquifer narrows. During periods of high water levels, some ground water is diverted locally to San Antonio and San Pedro Springs.

Barrier faults in the aquifer in northern Bexar County direct ground water toward the northeast below both the outcrop and hydraulically connected subcrop regions. A study of trichlorofluoromethane distribution in ground water illus-

trated the flow of ground water parallel to a major fault north of San Antonio (Thompson and Hayes, 1979). Ground water may flow across faults in this part of northern Bexar County into the confined zone during periods when the potentiometric surface of the confined zone is lower than that of the unconfined zone (Maclay and Small, 1984). Flow patterns in the recharge areas of Comal and Hays Counties are less defined due to the karstic cavernous permeability of the Edwards aquifer in the region. The regional flow pattern in the area north of the Comal Springs fault is eastward. Near Cibolo Creek, some water may flow eastward into the confined zone in Comal County.

Ground water in the confined, freshwater part of the aquifer in Comal County flows northeastward in a narrow area between the Comal Springs fault and the "bad-water" line (fig. 6). Some movement from the unconfined to the confined zone may occur along this fault near the Bexar-Comal County boundary. Flow from the downthrown side of the Comal Springs fault (confined zone) sustains the flow of Comal Springs. Water from the unconfined zone in northwestern Comal County moves toward Hueco Springs in the area northwest of the Hueco Springs fault (fig. 6). Ground water in the unconfined zone between the Hueco and Comal Springs faults generally flows northeastward into the confined zone to discharge at San Marcos Springs. Additional discharge at San Marcos Springs originates from recharge in south-central Hays County.

Ground-water velocities have been estimated for the Edwards aquifer by a number of methods. The residence time of ground water in the confined, freshwater part of the aquifer is estimated on the basis of tritium concentrations to be greater than 20 years (Pearson and others, 1975). The distribution of a fluorocarbon compound (trichlorofluoromethane) in a plume in the confined zone of Bexar, Comal, and Hays Counties has indicated an average minimum ground-water velocity of about 14 ft/d (Thompson and Hayes, 1979). An estimate of flow velocity in the confined zone from recharge, storage, and average flow-distance estimates yielded a velocity of about 27 ft/d. Several dye-tracing attempts at wells in Bexar County using Rhodamine WT dye gave results ranging from 2 to 31 ft/d (Maclay and others, 1981).

Hydrologic Balance

Average recharge to the Edwards aquifer has been estimated for 1934-78 by Puente (1978). Recharge was estimated by the difference between measured streamflow upstream and downstream from the recharge area and inflow from interstream areas within this area. The calculated average recharge by drainage basin is shown in figure 7. Other sources of recharge--such as from unlined or cracked storm drains; irrigation of farmland and lawns in residential areas; cross-formational flow from the Glen Rose Formation, Austin Group, and Buda Limestone; and exchanges across the "bad-water" line--are included as estimates in the recharge reported for each drainage basin.

Discharge by pumpage from the aquifer has more than tripled since 1934 (Reeves and Ozuna, 1985). Water levels declined to their lowest elevations in a decade during the summer of 1984, approaching 620 ft above sea level at San Antonio. Ground-water pumpage and water use by county are illustrated in figure 8 for 1981. During 1976-81, the volume of ground water in storage fluctuated above and below average conditions for the aquifer. Dryer-than-normal conditions during 1983 and 1984 decreased both the volume of recharge to the aquifer

RECORD OF COMMUNICATION	(Record of Item Checked Below) x Phone Call ___Discussion ___Field Trip ___Conference ___Other(Specify)	
To: Bill Taylor U.S. EPA Region VI (214) 655-6740	From: Kurt Soutendijk FIT Chemist	Date: 12/4/89 Time: 11:45 - 11:50 am

SUBJECT: Monier Resources, Inc.

SUMMARY OF COMMUNICATION

The FIT phoned Bill Taylor at the EPA. The FIT informed Bill Taylor that the MRI site had been remediated and that FIT was without a source to use for a prescore. Mr. Taylor instructed the FIT to write a memo stating that due to lack of a source at the MRI facility, a prescore was indeterminable.

CONCLUSIONS, ACTION TAKEN OR REQUIRED

INFORMATION COPIES
TO:

EPA FORM 1300-6 (7-72)
Replaces EPA HQ Form 5300-3 which may be used until Supply is Exhausted.